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ABSTRACT

This first phase of the 1970 Survey of Alberta Manpower Development deals with the Alberta, Canada manpower supply and the capacity of the major post-secondary educational institutions in the province to provide that supply. A count of those graduating in 1970 with a post-secondary degree or certificate, was obtained by means of mail questionnaires and interviews. Intended to provide both general and specific information for the Master Planning Project of the Alberta Colleges Commission, major findings include: (1) Twice as many college graduates in natural sciences, engineering, and mathematics are needed immediately and four to six times as many technicians in these areas, (2) Many more graduates in human services, the arts, and recreation are needed, (3) There were 13,768 graduates at the post-secondary level, in addition to 807 university completions and 4,051 licensed by regulatory bodies but not trained in Alberta, (4) Physical facilities provide 1,884,040 square feet of instructional area with 66,835 classroom and laboratory student stations, and (5) 71 percent of the $133,976,000 expended was utilized by the universities, 15 percent by the technical institutes, 7 percent by the colleges, and the rest in other vocational programs. Numerous tables present the data. (AG)

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THE 1970 SURVEY

OF

ALBERTA MANPOWER DEVELOPMENT

P H A S E I

by

Donald L. Campbell

A Study for the

Department of Advanced Education
and
Department of Labour
1972

COMPENDIUM

The 1970 Survey of Alberta Manpower Development Phase I provides an abundance of basic data on the inputs and outputs of the post-secondary educational system. There are so many questions that can be asked about the system that to provide selected conclusions would be to indicate biases and still leave much unanswered. The value of the study should be in its usefulness in providing facts for the consideration of a multitude of questions from many sources. In addition, the study is intended to provide specific data and information for the Master Planning Project of the Alberta Colleges Commission. Most of the information is contained in the text but the following summary consolidates the highlights.

There were 321 different subjects of study available through the major educational institutions in the province in 1970, including thirty-one apprenticeship trades. These subjects were preparatory for employment in twenty-one major occupational classifications according to the Canadian Classification and Dictionary of Occupations. The subjects of study range from 16 hours duration to 3600 hours or four years duration. The largest selection is available from the University of Alberta, followed by The University of Calgary, followed by the Northern Alberta Institute of Technology, the Southern Alberta Institute of Technology and Mount Royal College.

In the calendar year 1970 the major educational institutions produced 13,768 graduates at the three levels of recognition of degree, diploma and certificate. In addition, there were 807 university post-graduate completions and there were 4,051 persons examined and licensed only by regulatory bodies but who did not receive training through a major educational institution in Alberta. Of the 13,768 graduates,

35.8% received a university degree and 20.1% received a diploma compared with 44.1% who received a certificate. The largest group of graduates, 14.8% of the total, were in the classification of Medicine and Health Services. Of this group, about 10% or 205 persons were professionally trained and 90% or 1,839 persons were trained as support personnel in health services. The next largest number of graduates was in Education with 13.7% or 1,886 persons. Education was followed by Clerical and Related Occupations in which 13.5% of the total graduated, whereas only 3.5% or 480 persons graduated in Commerce or Business. Natural Sciences, Engineering and Mathematics was next after Clerical and Related Occupations with 11.6% of the total graduates. In Natural Sciences, Engineering and Mathematics about 55% or 884 persons were professionally trained and about 45% or 718 persons were trained as support personnel. In Social Sciences, with 11.6% of the total, 52% or 840 persons were professionally trained and 48% or 753 persons were trained as support personnel. An insignificant amount of training was done in artistic, recreation, sales, service, farming and oil and gas field occupations, and even less in occupations in religion.

The major educational institutions in the province provide a total scheduled instructional area of 1,884,040 square feet. This area is made up of 870,223 square feet of classroom space which is 47% of the total and 692,942 square feet of laboratory space which is 38% of the total and 267,531 square feet of shop area which is 15% of the total. Within these areas there are 66,835 student stations. The student stations are made up of 49,947 classroom student stations which is 75% of the total and 14,447 laboratory student stations which is 22% of the total and 1,693 shop student stations which is 3% of the total. The utilization

of space is relative and is indicated by a utilization index. The index varies from 27.5 to 80.5 in the use of classroom space and from 14.5 to 85.0 in the use of laboratory space. The highest utilization index for classroom space is shown for Mount Royal College, followed by A.V.C. Fort McMurray, A.V.C. Calgary, Nursing Aide Schools and Medicine Hat College. The lowest utilization index for classrooms is shown for the Agricultural and Vocational College Fairview, Forest Technology School, Agricultural and Vocational College Olds and the Southern Alberta Institute of Technology. The highest utilization index for laboratory space is shown for Mount Royal College, followed by A.V.C. Fort McMurray and Nursing Aide Schools and the lowest utilization index for laboratory space is shown for Agricultural and Vocational College Fairview, Grande Prairie Regional College and Lethbridge Community College.

The total expenditure of funds in the period under consideration was $133,976,000 not including capital expenditures. Of this amount 71% was utilized by the Universities and 15% by the Technical Institutes. The Colleges utilized 7% and the Division of Vocational Education, the Alberta Vocational Centres and the Agricultural and Vocational Colleges together utilized 5.5%. Apprenticeship required 1%. The remainder was utilized by the other institutions.

OBSERVATIONS

Numerous observations will be made of the findings of this phase of the study and certainly the following will be among them. Hopefully the value of these observations will be in planning actions for the future that will provide a greater return to the community from the investment of money and men in education.

In the immediate future, twice as many graduates in Natural Sciences, Engineering and Mathematics should be produced. At the same time, from four to six times as many natural science, engineering and mathematics technologists and technicians need to be graduated. Commencing immediately there should be a significant increase in the number of graduates in the occupational areas of artistic, recreational, sales, service and certain agricultural pursuits.

To obtain the increased number of graduates, it may be necessary to provide additional incentives in order to direct more people to these areas.

To obtain the increased number of graduates, the present rate of student drop-outs should be reduced by more effective operation and utilization of facilities.

Enrolment in these programs should be encouraged, not just in Edmonton and Calgary institutions but in institutions throughout the Province because of the apparent increase in participation when study is available on a wide geographic basis. This is evidenced by the large number of clerical and nursing graduates where such training is offered on the widest possible geographic basis in institutions and hospitals. For this reason also, a greater portion of the short term training set up in institutions should be done as on-the-job training in co-operation with industry.

The cost of implementing these observations may increase the cost of education, but the return on the investment will be much higher.

ACKNOWLEDGEMENTS

Acknowledgement is extended to the many Presidents, Principals, Directors and Administrators of the institutions throughout the Province who made available the basic data for this study. Many others in various offices throughout the community also contributed information, clarification and encouragement and to each of them is extended a word of thanks.

In particular, recognition is directed to Mr. Gordon H. Wright, Director, Labour Research and Immigration Section, Alberta Department of Labour who was instrumental in originating the study. Special recognition is given to Mrs. Lynn Walker, Department of Advanced Education for her assistance and many contributions throughout the period of the study.

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CHAPTER I

INTRODUCTION

I. PURPOSE OF THE STUDY

One of the more significant ingredients that contribute to the expanding industrialization of the Province of Alberta is manpower. Manpower however, consists of more than just sheer numbers of people. The manpower that is valuable to industry comes in varying levels of competency, knowledge and skill. The question has been raised of how many people are being made available with the different competencies needed, along with the further question of where such educational preparation can be obtained. This study is an attempt to answer these questions and with limitations, to examine the extent to which the existing facilities are being used to produce the manpower needs of the labour market. One of the criticisms that may be directed to the study is that an examination of the system as a means of preparation for employment denies recognition of the education of the whole man and that the worker must be culturally conscious and not just prepared for automated employment. It is not intended that the determination of the essential elements of preparation for employment should in any way deny the individual the right nor the opportunity to pursue studies for the purpose of cultural development. The examination of manpower development is intended to assist educational institutions to maximize their effectiveness in this particular undertaking for the labour market. It need not detract from their undertaking to provide education in its broadest sense for any other purpose.

II. SCOPE AND SEQUENCE

In an expanding technological and economic society and with the significant increases in the costs of education, it is imperative to plan manpower development so that the requirements and needs of the community can be met with an adequate supply of competent and properly trained persons. The 1970 Survey of Alberta Manpower Development is divided into three main phases. This, the first phase of the study concerns itself with the supply of manpower and the capacity of the system to provide that supply. The second phase to follow, examines the relationship of study and graduation to the needs of the job and the third phase of the study, also to follow, concerns itself with the demand for manpower.

Phase I is an accurate count of the actual number of persons who graduated from all institutions at a point in time with the form of recognition issued by the institution. The point in time is the calendar year from January 1, 1970 to December 31, 1970. It is recognized when counting only those persons who obtained a degree, diploma or certificate that a significant number of others who were partially trained will enter the labour market and function successfully. However, the significance of the degree, diploma and certificate is two-fold. First, such documentation indicates the successful completion of the requirements of a program as set out by the institution. Secondly, such documentation is recognized as a standard of performance within the labour market. As long as the business community continues to recognize these documents as measuring instruments for recruitment, it will be valid to measure the success of the educational and training

system by a count of the graduates who have received such documentation. There are, of course, other measurements that may be used to determine the success of the operation of an institution, including a measure of those who complete a program relative to those who do not. Utilization which is a measure of the efficient use of space and facilities, is a significant comparative measurement as is the determination of the cost of producing a graduate compared to the cost by similar institutions. A measure of the number of graduates who find employment appropriate to their preparation also reflects the success and acceptance of the institution and much can be learned from the views of the graduates themselves. All of these measures are or will be dealt with to some extent in the three phases of the study.

III. METHODOLOGY

The 1970 Survey of Alberta Manpower Development is based on information gathered directly from each major educational institution in the Province and from those agencies that are responsible for a significant contribution to the trained manpower produced for the labour force. These agencies include apprenticeship, health services, nursing schools, the Petroleum Industry Training Service and the Division of Vocational Education as distinct from the Training Centres which are also responsible to the Division.

An outline of the purpose and intent of the study together with a questionnaire was forwarded to the head of each major educational institution as well as those noted, together with a request for their

participation in the study. A follow up interview was conducted with representatives of the institution when such was requested or deemed desirable in order to clarify any aspect of the questionnaire and to obtain its return in as complete a form as possible.

The information provided by the institutions was then compiled into the various tables and an analysis undertaken of the results. The questionnaire was designed to be broad enough in its definitions to accommodate the many and varied situations anticipated to exist in the different levels and sizes of institutions. In the case of the Universities it was necessary to be more specific in outline in order to provide for the greater variation of operation they experience because of their size. Examples of the two questionnaires are included in Appendix B, page 152.

Some of the institutions could not complete the questionnaire because the data requested was not available. In some instances, the data was available only in total and the benefit of detail was lost in the analysis. However with these few exceptions, the information obtained permitted an adequate compilation of results.

It was necessary to establish a criteria for identifying or classifying the level of performance or standard of an activity identified by a program title in order to establish a basis for counting graduates. The factor that was common to all programs, subjects and courses was the time allotted to study or participation. The allocation of time does not include a measure of the quality of material dealt with in the time period, but it is a factor that provides a common denominator for measurement. The total hours of study required to complete a program where a program is a composite of

subjects, was used as the measure of the level of competence attained. The count of persons was based on the number who received recognition by the institution in the form of a degree, diploma or certificate for having attained the required level of competence.

IV. LIMITS AND DELIMITATIONS

The study is limited to education and training at the post-secondary level and to training which is normally provided outside the "regular school system". No data has been included on high school graduates. University post-graduate (and graduate) work has been omitted throughout the study unless specifically noted because of its highly individualized nature both in terms of subjects and time. Programs offered by various post-secondary institutions which come under the general heading of continuation, or adult classes, or night school programs have likewise been excluded. It should also be noted that in some of the institutions and particularly the Colleges, programs of study are offered in subjects that are academic upgrading or university transfer in nature. These also are excluded because of their on-going nature.

V. DEFINITION OF TERMS

The definitions of terms used in the survey have no particular authority. The definitions attempt to convey the meaning of terms which are found to be used most frequently among the major educational institutions. In practice it is recognized that various interpretations and meanings attach to the terms Program, Subject and Course. Because of the tendency to use these terms interchangeably, particular attention

should be directed to the definitions that follow and that are used throughout the study.

Program - a comprehensive schedule of subjects covering the requirements for formal recognition which may be conferred by the institution in the form of a degree, diploma or certificate.

In this text, the term Program is used to identify the measure of formal qualification a graduate may receive upon successful completion of the requirements for graduation. For example, at the university level, the measure of formal qualification the graduate may receive is a Bachelor of Arts degree of a Master of Education or, depending on the program, a Diploma in Dental Hygiene.

Subject - a department of knowledge or skill; a field of study; a major; or an area of concentration of study.

The term Subject is used to designate a distinct area or department of knowledge or skill. It is the designation used to identify the concentration of study undertaken. It is the field in which the graduate has been prepared by study to function as a knowledgeable participant. Whereas the program may be a Bachelor of Arts degree, the subject of study may be - Economics, or Philosophy or Political Science.

Course - a series of lectures or other learning experiences dealing with a segment of a subject.

A Course is identified as that portion of a subject that is presented in a limited segment. A subject would therefore be made up of a number of courses, some of which might be sequential. Three such sequential courses may be identified numerically, as for instance Math. 212 and Math. 312 and Math. 412.

Room-Period Utilization - is determined by the formula, $\frac{A}{B \times 50} \times 100$

where: - A is the number of hours per week the room is scheduled for regularly held classes (irrespective of the number in the room),

- B is the number of classrooms.

The basic fifty hours per week is an arbitrary time period chosen only as a standard of measurement and for its convenience of calculation. It is not intended to infer that the fifty hours per week is an ideal one.

Student-Station Utilization - is determined by the formula, $\frac{X}{Y \times 50} \times 100$

where: - X is the average number of student station occupanices per week per area (classroom, etc.).

- Y is the number of student stations per area.

The basic fifty hours per week is also an arbitrary time period chosen only to standardize the measurement.

VI. COMPARATIVE STUDIES

International Studies. A review of the comparative studies reveals a continued shortage of information on the subject of manpower supply and demand. On the international scene perhaps the most closely parallel study was undertaken in Japan by the Planning and Research Department of the Office of the Minister of Education and released in a report to the Organization for Economic Co-operation and Development in October 1971.[1] The study examined the employment pattern of graduates following graduation and related employment to the field of study to determine the correlation between training and subsequent employment. The purpose of

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[1]Organization for Economic Co-operation and Development, Evaluation of the Structure of the Labour Force in Japan (Intergovernmental Conference on the Utilisation of Highly Qualified Personnel. Paris: O.E.C.D., 1971), p. 3.

determining this correlation was to provide a basis for designing and modernizing curricula in the various educational and training institutions in order to bring them in line insofar as possible with the evolving needs of a very rapidly developing industrial setting. The study further examined the labour supply and demand needs of the country in order to relate job opportunities to the number and level of graduates of educational and training institutions.

Canadian Studies. The major study of this nature in Canada has been Canada's Highly Qualified Manpower Resources 1970. The study points out that there are two main sources of supply for this kind of personnel. One is through the educational stream and the other by way of immigration. Between 1941 and 1961, nearly 25% of the highly qualified manpower in Canada was obtained through immigration.[2] There will have been a change in this situation in the succeeding decade, but an examination of the percentages of highly qualified manpower in Alberta provided by way of the educational stream as compared to immigration suggests there is still room for additional Alberta graduates.

With respect to the relationship between the field of study and the field of subsequent employment, it is revealed that 78% of all scientists hold employment in the same field in which they took their highest degree with a range from 90% for architects to 58% for physical sciences.[3] The study also reveals a continuing increase in the

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[2]A.G. Atkinson, K.J. Barnes, Ellen Richardson, Canada's Highly Qualified Manpower Resources, Research Branch, Department of Manpower and Immigration, (Ottawa: Information Canada, 1970), p. vi.

[3]Ibid., p. vii.

proportion of the labour force that falls into the category "highly qualified". In 1961 this proportion amounted to 10% and it is predicted that by 1975 the proportion will amount to 16%.[4]

The Research Branch of the Department of Manpower and Immigration released three further studies in 1971 that are significant to a consideration of the subject of manpower development. Supply and Requirements Projections of Engineers Canada 1976 was the title of one study and the Supply and Requirements Projections of Physicists Canada 1976 another. The third study was entitled The Labour Market Situation for University Graduates Canada. The study on the Supply and Requirements Projections of Engineers, projected a balance between supply and demand in the year 1976 provided the assumptions made of enrolment and productivity remained unchanged.[5] The study on the Supply and Requirements Projections of Physicists projected a significant oversupply of Physicists in Canada by 1976.[6] In Alberta in 1970, approximately 2.6% of all graduates in Natural Sciences, Engineering and Mathematics were Physicists as shown in Table XV, page 43 . In the Department of Manpower and Immigration's study on the Market Situation for University Graduates, the study predicts an oversupply of graduates with Bachelor of Arts degrees and an oversupply of graduates at the Master of Arts

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[4] Ibid., p. 2.

[5] J. Neill Fortune and Peter Ross, Supply and Requirements Projections of Engineers Canada 1976, Research Branch, Department of Manpower and Immigration, (Ottawa: 1971), p. ii.

[6] Peter Ross, Supply and Requirements Projections of Physicists Canada 1976, Research Branch, Department of Manpower and Immigration, (Ottawa: 1971), p. ii.

degree level including business graduates. However, the most severe area of excess supply will be in Education.[7] This projection becomes particularly significant when viewing the graduation figures in Education for Alberta in 1970.

A further study of the Department of Manpower and Immigration entitled Survey of Professional, Scientific and Technical Manpower 1967 provides valuable information on the relative distribution of highly qualified manpower by field of principal employment at the professional and technical level.[8] Employment patterns change over time, but the information provided in this study is valuable in revealing a percentage distribution for comparison with the percentage distribution of graduates in Alberta in 1970. Such a comparison indicates there is about a 50% graduation of Engineers relative to employment distribution and almost five times as many graduates in Social Sciences as indicated in the employment distribution.

Activity on the Canadian scene is further revealed by the study Enrolment in Educational Institutions by Province 1951-52 to 1980-81 prepared for the Economic Council of Canada by Zsigmond and Wenaas. This study is directed essentially to enrolment projections for all levels of educational undertaking. Of particular concern are matters dealing with post-secondary enrolments and of graduations. Significant increases have been evident in Canada in university degree graduations

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[7] J. Kushner and others, The Market Situation for University Graduates Canada, Research Branch, Department of Manpower and Immigration, (Ottawa: 1971), p. ii-iii.

[8] Department of Manpower and Immigration, Survey of Professional, Scientific and Technical Manpower - 1967, Manpower Information and Analysis Branch, (Ottawa: 1967), Tables 25 and 33.

between 1951 and 1968. A similar increase has been noted with non-university post-secondary graduations at a later time period between 1960 and 1968. Past trends in graduations in Canada reveal a shift away from Applied Science and Engineering and away from Law and Medicine and an increase in Arts, Education and Pure Science.[9] In Alberta, according to the figures of Zsigmond and Wenaas, the same trends are evident between 1951 and 1968 with the exception of Pure Sciences which shows a decrease.[10] No trend is provided by the 1970 Survey of Alberta Manpower Development, but the relative distribution of graduates among these disciplines is indicated in Table VI, page 31 and Tables XV, XVI and XVII, pages 43 - 46.

Alberta Studies. Within the Province of Alberta there have been limited studies to determine the manpower supply and the needs of industry. In 1968 a study by Campbell entitled "Enrolments and Financing of Provincial Technical and Vocational Training in Alberta 1956-65", was completed which established baseline enrolment figures for technicians, apprentices and other vocational students.[11] An indication of the need for trained personnel was included and some ratios of technical support staff to professional personnel was noted.[12] The study showed an increase in enrolments in the decade but

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[9] Z.E. Zsigmond and C.J. Wenaas, Enrolment in Educational Institutions by Province 1951-52 to 1980-81, Economic Council of Canada, Staff Study No. 25, (Ottawa: Queen's Printer, 1970), pp. 80-83.

[10] Ibid., p. 200.

[11] Donald L. Campbell, "A Study of Enrolments and Financing of Provincial Technical and Vocational Training in Alberta 1956-65". (Unpublished thesis, The University of British Columbia, 1968), pp. 105-108.

[12] Ibid., pp. 6-18.

more important, pointed out that enrolments do not determine that an adequate supply of graduates is being provided to meet the needs of industry.

This observation was emphasized by a further study by Campbell in 1969 on the "Graduation Rate from Enrolment at the Southern Alberta Institute of Technology 1960-1966".[13] This study in selected subjects revealed a median average of 30.3% graduation of first year enrolments and a low of 3% graduation of the number who were sufficiently interested in such study to apply for admission.

"A Baseline Study of Adult Training and Retraining in Alberta", was completed by Schonfield in 1969. This study looked carefully and critically at the undertakings and outcome of training under the terms of the Occupational Training of Adults agreement with the Federal Government. Meaningful conclusions that would assist planning for manpower training were difficult because of the inadequacy of information . However it was concluded that adult training and retraining should be concerned with an older clientelle and should place greater emphasis on vocational skills[14] than on "a form of remedial education for academic under-achievers of average intelligence".[15]

A recent study done within the Province of Alberta entitled "The Status and Anticipated Manpower Requirements by Selected Sectors

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[13]Donald L. Campbell, "Graduation Rate from Enrolment at the Southern Alberta Institute of Technology 1960-66". (Unpublished Study, Department of Education, 1969), Table I.

[14]David Schonfield, "A Baseline Study of Adult Training and Retraining in Alberta". (Unpublished Study, A Report for the Alberta Human Resources Research Council, 1969), p. 91.

[15]Ibid., p. 34.

of the Agricultural Industry in Alberta" was completed by Garrow in 1970. This study is limited to only one industrial sector in the Province, that of agriculture. The study does however, conclude that there is an increasing need for additional training at the technical level for workers in the agricultural sector of industry.[16] This finding is significant when the agricultural output of the Alberta educational and training system is examined.

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[16]Patrick Garrow, "The Status and Anticipated Manpower Requirements by Selected Sectors of the Agricultural Industry in Alberta". (Unpublished thesis, The University of Calgary, 1970), p. iii.

CHAPTER II

SUBJECTS AND GRADUATIONS

The main thrust of Phase I of the study is contained in Table I Appendix A, page 66, which outlines the subjects, sources and graduates of manpower development opportunities in Alberta in 1970 except at the university post-graduate (and graduate) level. This table lists alphabetically, the many and varied subjects of study available from all of the major educational institutions in the province. The titles of the subjects are those provided by the institutions, with the exception of a few secretarial subjects which have been accumulated under the one title of Secretarial Science. A relationship between the intent of the subject listed and the most closely associated occupational classification is also included in Table I. The occupational classifications are coded using the code of the Canadian Classification and Dictionary of Occupations. In some instances, where identification is not difficult, a two or a three digit code is used. In other instances, where a more accurate identification is required, a four digit code is used. Additional information is provided for the reader under the heading of Program in Table I which identifies the level of training offered in the subject. The level of study, as identified by the program, is an arbitrary measure which has been determined by the institutions and indicated by the form of recognition given for successful completion. Programs are limited to three levels of attainment. A Degree is available for successful completion of a program at the university level; a Diploma of Technology and a Diploma of Applied Arts are available at the Institutes of Technology; a Diploma, including an Associate Diploma and a Professional or Graduate Diploma may be obtained from a

university or college; a Certificate may be obtained from a college or other institution. Certain certificates are available from the universities but these have not been included because generally they involve very limited study. As will be seen from the programs offered by the various institutions, diplomas and certificates are offered for programs of varying instructional periods. No attempt has been made in the study to judge the quality of any of the programs offered, but Table I includes the instructional period provided in each program in order that the viewer may make comparisons between the different levels of training offered for any particular subject. In some instances, the same subject is offered at two different levels. Such a situation can be determined by examining the instructional period provided and thereby determine the program most suited to the needs of the individual. Table I indicates the major educational institution that offers each subject of study. In some instances, the subject is offered in a number of institutions. It may also be found that the same subject is offered at different levels in different educational institutions. From the information in Table I it is possible for the viewer to examine the subject offered, the level of study and the educational institution from which that level of study is available.

Finally, Table I provides information on the number of graduates in 1970 in each of the subjects listed and shows a total graduation of 13,768. This information should be valuable for counselling and for evaluating the supply of graduates in a subject relative to the supply of graduates in other subjects. Table I indicates that in some subjects there were no graduates in 1970. In many instances where no

graduates are shown for 1970, there was simply no enrolment in that subject, even though it was offered. In other cases where there had been an enrolment originally, no one successfully completed the requirements of the program. In a few instances, such as in the case of Medicine at the University of Calgary, the first graduates will not have completed the program until after the year 1970.

Certain subjects shown in Table I are subjects coming under the terms of the Apprenticeship Act and/or the Tradesmen's Qualification Act and require registration with the Department of Labour in order to participate in training. For these subjects the major educational institution is shown as the Apprenticeship and Tradesmen's Qualification Branch, Department of Labour. The Apprenticeship and Tradesmen's Qualification Branch however, allocate the classroom training of such apprentices to existing educational institutions. The institutions involved vary from place to place and in different subjects. In the case of apprenticeship training, the educational institution in which classroom training is taken is indicated in brackets and may show two or three different centres.

In the case of Barbers, Beauticians, Dental Mechanics and Elevator Constructors which are included in Table I, there is no formal apprenticeship training provided in the major educational institutions of the province. Examination and licensing however, is required and is undertaken by the Apprenticeship and Tradesmen's Qualification Branch of the Department of Labour. Training in these subjects is usually obtained in related fields, through proprietary schools or on-the-job training in industry.

Table I lists 321 different subjects available for study distributed among 21 major occupational classifications. Instructional periods range from 16 hours to 3600 hours or four years. Graduate study beyond this maximum instructional period is not included in Table I but is referred to in Table VI, page 31.

Table II indicates the number of different subjects offered by each major educational institution within the different levels of recognition as indicated by a degree, diploma or certificate. In some instances the institution offered the same subject at different levels of recognition but used the same title to identify the subject. The greatest selection of different subjects is to be found at the University of Alberta, followed by the University of Calgary. The Northern Alberta Institute of Technology, followed by the Southern Alberta Institute of Technology and then by Mount Royal College offer the greatest number of subjects in the other institutions. There are thirty-one different trades registered under the Apprenticeship and Tradesmen's Qualification Branch of the Department of Labour. The public colleges and agricultural colleges vary in the number of subjects they offer and it should be noted that these institutions offer academic upgrading courses and transfer courses in addition to the number of subjects noted in Table II.

TABLE II

THE NUMBER OF SUBJECTS OFFERED WITHIN PROGRAMS BY LEVEL OF RECOGNITION - 1970

	Number of Subjects Offered Within Programs of:			
	Degree level	Diploma level	Certificate level	Total
University of Alberta	76	7	1	81(1)
University of Calgary	47	2	-	48(2)
University of Lethbridge	19	-	-	19
Apprenticeship	-	-	31	31
Northern Alberta Institute of Technology	-	38	9	45(3)
Southern Alberta Institute of Technology	-	34	7	41
Grande Prairie Regional College	-	2	2	2(3)(4)
Lethbridge Community College	-	12	12	21(5)
Medicine Hat College	-	2	2	2(3)(4)
Mount Royal College	-	26	8	30(6)(4)
Red Deer College	-	5	2	5(3)(4)
Agricultural & Vocational College, Fairview	-	4	3	7
Agricultural & Vocational College, Olds	-	11	5	16
Agricultural & Vocational College, Vermilion	-	15	6	21
Division of Vocational Education	-	-	25	25
Alberta Vocational Centre Calgary	-	-	3	3
Alberta Vocational Centre Edmonton	-	-	4	4
Alberta Vocational Centre Fort McMurray	-	-	10	10
The Banff School of Fine Arts	-	1	3	4(7)

T A B L E II (continued)

	Number of Subjects Offered Within Programs of:			
	Degree level	Diploma level	Certificate level	Total
Alberta Hospitals	-	2	-	2
Lab & X-Ray School	-	-	1	1
Nursing Aide Schools, Calgary and Edmonton	-	-	1	1
Hospital Nursing Schools	-	1	-	1
Forest Technology School	-	-	3	3
Petroleum Industry Training School	-	-	6	6(8)

(1) Both degrees and diplomas offered in three subjects.

(2) Both a degree and a diploma offered in one subject.

(3) Both diplomas and certificates offered in two subjects.

(4) In addition, a university transfer program is offered.

(5) Both diplomas and certificates offered in three subjects.

(6) Both diplomas and certificates offered in four subjects.

(7) In addition, numerous short courses, conferences and seminars are offered.

(8) In addition, numerous petroleum industry short courses are offered.

Number of Graduates. The total number of graduates in all programs is 13,768. Table III shows the distribution of this number of graduates by the length of study required in order to complete the requirements as laid down by the respective institutions. The number completing four years of study, which includes degree graduates from universities, four year apprenticeship programs and the four year Art subjects at the Southern Alberta Institute of Technology as well as a combined General and Psychiatric Nursing Program at the Alberta Hospitals is 5,488. This makes up 39.9% of the total of all graduates. Those graduating from three years of study include degree graduates from university, three year apprenticeship graduates, aeronautical engineering graduates from the Southern Alberta Institute of Technology and nurses from hospital nursing schools and total 2,114. Those graduating from three year programs make up 15.3% of the total of all graduates. The graduates from two year programs are mainly from the technical institutes and the college system. The total number of two year graduates is 1,723. This group is 12.5% of the total graduates of 1970. Graduates from one year of study are widely distributed throughout the major educational institutions and total 1,647. This group makes up 12.0% of the total. A number of short term programs ranging between 100 and 900 hours of instruction account for 492 graduates or 3.6% of the total, and a further number of graduates in programs ranging from 10 to 100 hours of instruction total 2,304 or 16.7% of the total. For the most part, the latter group of programs are of 20 to 40 hours duration and are provided on a single offering basis. They are included, however, because they are directed specifically to members of the labour force with the intention of improving their performance on the job. Also included in Table III are 807 post-graduate

TABLE III

NUMBER OF GRADUATES FROM INSTITUTIONS BY LENGTH OF STUDY - 1970

	NUMBER OF GRADUATES							
	Post-Graduates	4 Yrs.	3 Yrs.	2 Yrs.	1 Yr.	100-900 Hours	10-100 Hours	Total
University of Alberta	611	2,324	1,088	19	229			3,660*
University of Calgary	196	1,325			76			1,401*
University of Lethbridge		182						182
								5,243
Apprenticeship		1,615	323					1,938
								1,938
Northern Alberta Institute of Technology				819	124			943
Southern Alberta Institute of Technology		32	2	393	86			513
Grande Prairie Regional College					38			38
Lethbridge Community College				52	77			129
Medicine Hat College				3	21			24
Mount Royal College				210	53			263
Red Deer College				41	39			80

TABLE III (continued)

	NUMBER OF GRADUATES							
	Post-Graduates	4 Yrs.	3 Yrs.	2 Yrs.	1 Yr.	100-900 Hours	10-100 Hours	Total
Agricultural & Vocational College, Fairview				19	18			37
Agricultural & Vocational College, Olds				128	21			149
Agricultural & Vocational College, Vermilion				39	86			125
								2,301
Division of Vocational Education					22	44	1,566	1,632
Alberta Vocational Centre Calgary					84			84
Alberta Vocational Centre Edmonton					180			180
Alberta Vocational Centre Fort McMurray					8	155		163
The Banff School of Fine Arts						98	7	105
Alberta Hospitals		10	43					53
Lab & X-Ray School					14			14
Nursing Aides					449			449

TABLE III (continued)

	NUMBER OF GRADUATES							
	Post-Graduates	4 Yrs.	3 Yrs.	2 Yrs.	1 Yr.	100-900 Hours	10-100 Hours	Total
Hospital Nursing Schools**			658					658
Forest Technology School					22		670	692
Petroleum Industry Training School						195	61	256
								4,286
Total Graduates		5,488	2,114	1,723	1,647	492	2,304	13,768
Percent of Total		39.9	15.3	12.5	12.0	3.6	16.7	(100.0%)
Post-Graduates	807							807
Grand Total								14,575

* Excluding Post-Graduates

** See Table VII.

completions, which when added to the 13,768 graduates brings the total of graduate personnel available to the labour market to 14,575.

Table III also indicates the number of university graduates, excluding post-graduates, in relation to the number of two year technician graduates from institutes and colleges and the number of tradesmen graduates from the apprenticeship program.

The distribution of graduates provided by groups of similar institutions by degrees, diplomas and certificates is shown in greater detail in Table IV. Table IV does not include post-graduate completions. University degrees make up 35.8% of the total of all graduations whereas diplomas, including some issued by the universities, make up only 20.1% of the total. The greatest number of graduations is at the certificate level which makes up 44.1% of the total. This table also emphasizes the fact that technically trained support staff for graduate professional personnel is below even a one to one ratio.

Graduates and Enrolments. Table V provides further information on the number of graduates at different levels and the enrolment where this is known, of both the original group from which the graduates are counted and the new enrolment in 1970 in the same subject as that from which the number of graduates is taken. The original enrolment from which the number of graduates subsequently emerged is subject to adjustment in the case of the Universities of Alberta, Calgary and Lethbridge. These figures are not accurate because of the number of transfers and postponement of continuous progress by the students. In some instances, the original enrolment was not known by the institution

T A B L E IV

GRADUATES BY LEVEL OF ATTAINMENT FOR GROUPS OF INSTITUTIONS - 1970

	Degrees	Diplomas	Certificates	Total
Universities	4,924	319	-	5,243
Apprenticeship	-	-	1,938	1,938
Technical Institutes	-	1,246	210	1,456
Colleges	-	306	228	534
Agricultural Colleges	-	186	125	311
Division and Vocational Centres	-	-	2,059	2,059
Nursing and Related Schools	-	711	463	1,174
Others	-	-	1,053	1,053
Totals	4,924	2,768	6,076	13,768
Percentage of Total	35.8	20.1	44.1	100.0

providing the information. As a result, the totals for original enrolment should not be used to make direct comparisons to the subsequent total number that graduates. Comparisons can be made for individual institutions however. The new enrolment figures for 1970 are more reliable and indicate a surprising stability between enrolment in 1970 and enrolment in the prior period of one to four years, as indicated in the column showing original enrolment of graduates. There are a few instances of significant increase as well as a few instances of significant decrease, but because of inaccuracy of some of the original enrolment figures it is difficult to draw valid conclusions.

T A B L E V

GRADUATES AND ENROLMENTS BY LEVEL OF RECOGNITION - 1970

	Number of Graduates				Original Enrolment of Graduates				New Enrolment in 1970			
	Degree	Diploma	Certificate	Total	Degree	Diploma	Certificate	Total	Degree	Diploma	Certificate	Total
University of Alberta	3417	243	-	3660[1]	-	-	-	4201[2]	-	-	-	5347
The University of Calgary	1325	76	-	1401[3]	-	-	-	1600[2]	-	-	-	2670
The University of Lethbridge	182	-	-	182	374	-	-	374	360	-	-	360
Apprenticeship	-	-	1938	1938	-	-	3212	3212	-	-	3178	3178
Northern Alberta Institute of Technology	-	819	124	943	-	1925	176	2101		1831	212	2043
Southern Alberta Institute of Technology	-	427	86	513	-	1184	124	1308	-	1412	147	1559
Grande Prairie Regional College	-	-	38	38	-	-	41	41	-	9	68	77
Lethbridge Community College	-	52	77	129	-	183	170	353	-	249	209	458
Medicine Hat College	-	3	21	24	-	6	43	49	-	9	53	62

T A B L E V (continued)

	Number of Graduates				Original Enrolment of Graduates				New Enrolment in 1970			
	Degree	Diploma	Certificate	Total	Degree	Diploma	Certificate	Total	Degree	Diploma	Certificate	Total
Mount Royal College	-	210	53	263	-	435	103	538	-	1226	235	1461
Red Deer College	-	41	39	80	-	46	60	106	-	61	71	132
Agricultural & Vocational College Fairview	-	19	18	37	-	25	24	49	-	16	20	36
Agricultural & Vocational College Olds	-	128	21	149	-	165	42	207	-	178	33	211
Agricultural & Vocational College Vermilion	-	39	86	125	-	85	87	172	-	71	109	180
Division of Vocational Education	-	-	1632	1632	-	-	-	-	-	-	-	-
Alberta Vocational Centre Calgary	-	-	84	84	-	-	157	157	-	-	-	-
Alberta Vocational Centre Edmonton	-	-	180[4]	180[4]	-	-	259	259	-	-	115	115
Alberta Vocational Centre Fort McMurray	-	-	163	163	-	-	267	267	-	-	-	-
The Banff School of Fine Arts	-	-	105	105	-	-	-	-	-	-	-	-

T A B L E V (continued)

	Number of Graduates				Original Enrolment of Graduates				New Enrolment in 1970			
	Degree	Diploma	Certificate	Total	Degree	Diploma	Certificate	Total	Degree	Diploma	Certificate	Total
Alberta Hospitals	-	53	-	53	-	87	-	87	-	63	-	63
Lab & X-Ray School	-	-	14	14	-	-	18	18	-	-	18	18
Nursing Aide Schools Calgary & Edmonton	-	-	449	449	-	-	503	503	-	-	620	620
Hospital Nursing Schools	-	658	-	658	-	811	-	811	-	663	-	663
Forest Technology School	-	-	692	692	-	-	707	707	-	-	-	-
Petroleum Industry Training School	-	-	256	256	-	-	-	-	-	-	-	-
Totals[5]												

[1] In addition, 611 post-graduate degrees completed.

[2] Complete enrolment figures by subject not available because of transfer and postponement.

[3] In addition, 196 post-graduate degrees completed.

[4] A number of short term participants not included.

[5] Because enrolment figures are not complete totals are omitted.

Table VI indicates the programs at the post-graduate level and the number of graduations from these programs in 1970. The distribution of the number of post-graduations indicates that a large proportion have completed study in the Master of Arts and Master of Education programs. With reference to the observation of the Department of Manpower and Immigration study on "The Labour Market Situation for University Graduates Canada" in which they refer to an anticipated oversupply of graduates of Arts and Education, Alberta should be concerned about the distribution indicated.

Hospital Nursing Schools. The training provided by hospital nursing schools has been presented in summary form in Table III, page 22, because the graduates enjoy essentially the same level of competency irrespective of the school from which they graduated. Table VII, however, indicates the contribution of each of the hospital nursing schools throughout the province, indicating the number of graduates, the original enrolment of that group and the new enrolment that took place in 1970. The results of this tabulation suggest a decrease in the number of persons undertaking nurses training in hospital nursing schools. At the same time, it should be noted that nursing training is being made available through public college institutions.

Examination and Licensing. Certain subject areas require a Government standard of qualification or an Association's license before the person may practice within the Province of Alberta. An indication of the number of persons prepared for such examination

T A B L E VI

PROGRAM, SOURCE AND GRADUATES IN UNIVERSITY POST-GRADUATE STUDIES - 1970

Program	Institution	Number of Graduates		Percent of Total
Master of Arts	University of Alberta	107		24.1
	The University of Calgary	43		
Master of Business Administration	University of Alberta	28		4.5
Master of Education	University of Alberta	131		28.6
	The University of Calgary	47		
Master of Engineering	University of Alberta	10		1.9
	The University of Calgary	2		
Master of Fine Arts	University of Alberta	3		.5
Master of Health Service Administration	University of Alberta	1		.2
Master of Hospital Pharmacy	University of Alberta	0		0
Master of Laws	University of Alberta	0		0
Master of Music	University of Alberta	2		.3
Master of Science	University of Alberta	170		35.1
	The University of Calgary	48		
Master of Science Engineering	The University of Calgary	23		3.7
Master of Social Welfare	The University of Calgary	7		1.1
			622	
Doctor of Education	University of Alberta	0		
Doctor of Philosophy	University of Alberta	159		
	The University of Calgary	26		
			185	
Doctor of Letters	University of Alberta	*		
Doctor of Science	University of Alberta	*		
Total	University of Alberta 611			
	The University of Calgary 196			
	The University of Lethbridge 0			
			807	100.0

* Awarded for outstanding achievement.

through training in the major educational institutions of the province has been given. In addition, a number of persons are qualified by Government examination and/or by Association licensing, having prepared themselves in some other manner or some other place than graduation through a major Alberta educational institution. Table VIII indicates the subject area and the number of persons who are qualified by government examination or licensing. Besides identifying the type of qualification obtained and the authority through which such qualification is provided, Table VIII indicates areas in which there is apparently limited training opportunity or a serious shortage in participation. In the case of those subjects falling within the major occupational classification of Service Occupations (baker, barber, beautician, cook), there were 6.5 times more people qualified by examination only than prepared through training in Alberta's major educational institutions. In the classification of Machining and Related Occupations (machinist, millwright, welder), 1.3 times more people were qualified by examination only than were prepared through training in Alberta's major educational institutions. In the case of Power Engineering, there were 22.7 times as many people qualified by examination only as were prepared by training in Alberta's major educational institutions. In other words, of the new entrants to the labour market in Service Occupations, only 13% were trained in a major educational institution; in Machining and Related Occupations only 44%; and in Power Engineering only 4% were trained in a major educational institution. This would suggest that employment opportunities exist for a greater number of Albertans if more could be trained for such occupations.

Additional employment opportunities would also appear to be available to an increased number of Nursing Aides as indicated by the fact that an additional 131 Nursing Aides were licensed in Alberta in addition to the Nursing Aides who received their training in Alberta. This situation with respect to Nursing Aides and similarly with Medical Lab Technicians and Medical X-Ray Technicians is indicated in Tables IX, X and XI.

Table XII summarizes the distribution of graduates available to the labour market on the basis of those who completed training in a major educational institution, including post-graduate completions and those examined and licensed only. On this basis, 22% or one out of every four to five people making themselves available to the labour market was prepared other than in a major educational institution in Alberta.

T A B L E VII

SUBJECT, SOURCES, GRADUATES AND ENROLMENT IN
ALBERTA HOSPITAL NURSING SCHOOLS - 1970

Subject	Institution	Number of Graduates	Original Enrolment	New Enrolment in 1970
Nursing				
	Archer Memorial Hospital	14	15	14
	University of Alberta Hospital	112	128	125
	Royal Alexandra Hospital	126	143	120
	Misericordia Hospital	40	58	52
	Edmonton General Hospital (College St. Jean)	75	88	45*
	Calgary General Hospital	73	93	80
	Calgary Foothills Hospital	93	116	107
	Holy Cross Hospital	43	52	42
	Galt Hospital (Lethbridge)	28	42	37
	St. Michael's Hospital	37	47	41
	Medicine Hat Hospital	17	29	0
TOTALS		658	811	663

* Three year program discontinued.

T A B L E VIII

QUALIFICATION BY GOVERNMENT EXAMINATION AND LICENSING ONLY - 1970

(Training Received Elsewhere Than in a Major Educational Institution)

Major Classification	Subject	Qualification	Qualifying Department	Number
31	Dental Mechanic	Certificate of Proficiency	Apprenticeship, Dept. of Labour	3
	Nursing Aides	Practicing License	Medical Services, Dept. of Health	131
61	Baker	Certificate of Qualification	Apprenticeship, Dept. of Labour	6
	Barber	Certificate of Proficiency	Apprenticeship, Dept. of Labour	157
	Beautician	Certificate of Proficiency	Apprenticeship, Dept. of Labour	951
	Cook	Certificate of Qualification	Apprenticeship, Dept. of Labour	72
83	Machinist	Certificate of Qualification	Apprenticeship, Dept. of Labour	26
	Millwright	Certificate of Qualification	Apprenticeship, Dept. of Labour	23
	Welder	First Class Certificate	Apprenticeship, Dept. of Labour	127
	Welders	Grade B Pressure Certificate	Boilers Branch, Dept. of Labour	268
85	Appliance Serviceman	Certificate of Qualification	Apprenticeship, Dept. of Labour	20
	Auto Body Mechanic	Certificate of Proficiency	Apprenticeship, Dept. of Labour	47
	Elevator Constructors	Certificate of Proficiency	Apprenticeship, Dept. of Labour	55
	Floorcovering Mechanic	Certificate of Qualification	Apprenticeship, Dept. of Labour	125
	Heavy Duty Mechanic	Certificate of Proficiency	Apprenticeship, Dept. of Labour	101
	Motor Mechanic	Certificate of Proficiency	Apprenticeship, Dept. of Labour	229

T A B L E VIII (continued)

Major Classification	Subject	Qualification	Qualifying Department	Number
85	Partsman	Certificate of Qualification	Apprenticeship, Dept. of Labour	89
	Radio Technician	Certificate of Proficiency	Apprenticeship, Dept. of Labour	35
	Refrigeration Mechanic	Certificate of Proficiency	Apprenticeship, Dept. of Labour	5
	Sheet Metal Mechanic	Certificate of Proficiency	Apprenticeship, Dept. of Labour	20
87	Bricklayer	Certificate of Qualification	Apprenticeship, Dept. of Labour	30
	Carpenter	Certificate of Qualification	Apprenticeship, Dept. of Labour	104
	Electrician	First Class Certificate	Apprenticeship, Dept. of Labour	75
	Gasfitter	First Class Certificate	Apprenticeship, Dept. of Labour	25
	Glassworker	Certificate of Qualification	Apprenticeship, Dept. of Labour	36
	Lather	Certificate of Qualification	Apprenticeship, Dept. of Labour	25
	Painter and Decorator	Certificate of Qualification	Apprenticeship, Dept. of Labour	19
	Plumber	Certificate of Proficiency	Apprenticeship, Dept. of Labour	76
	Power Electrician	Certificate of Qualification	Apprenticeship, Dept. of Labour	30
	Steamfitter	Certificate of Proficiency	Apprenticeship, Dept. of Labour	73
	Tile Setter	Certificate of Qualification	Apprenticeship, Dept. of Labour	3
95	Power Engineering	First Class Engineer	Boilers Branch, Dept. of Labour	18
		Second Class Engineer	Boilers Branch, Dept. of Labour	49
		Third Class Engineer	Boilers Branch, Dept. of Labour	107
		Fourth Class Engineer	Boilers Branch, Dept. of Labour	266
		Fireman's	Boilers Branch, Dept. of Labour	159
		Special Oilwell	Boilers Branch, Dept. of Labour	466
Total				4051

T A B L E IX

NUMBER OF NURSING AIDES LICENSED IN ALBERTA - 1970

	1970
Trained in Alberta Nursing Aide Schools (Certified)	449
Trained outside Alberta	131
Total Licensed	580

T A B L E X

NUMBER OF MEDICAL LABORATORY TECHNICIANS LICENSED IN ALBERTA - 1970

	1970
Number receiving Institute and Hospital training	50
Number trained in Hospital only or trained outside Alberta	44
Total Licensed	94

* The licensing agency is the Canadian Society of Laboratory Technologists.

T A B L E XI

NUMBER OF MEDICAL X-RAY TECHNICIANS LICENSED IN ALBERTA - 1970*

	1970
Number receiving Technical Institute and Hospital training	42
Number trained in Hospitals only	13
Number trained outside Alberta	12
Total Licensed	67

* The licensing agency is the Canadian Society of Radiological Technicians.

T A B L E XII

GRADUATED AND LICENSED PERSONNEL AVAILABLE TO THE LABOUR MARKET - 1970

Source	Number	Percent
Graduates from major educational institutions	13,768	74.
University post-graduate completions	807	4.
Government examined and licensed only	4,051	22.
Total	18,626	100.

CHAPTER III

DISTRIBUTION OF GRADUATES BY OCCUPATIONAL CLASSIFICATION

The total number of graduates available to the labour market is significant in itself, but the distribution of the graduates relative to their field of study and the related occupational classification is also of significance in determining the number of people who will be available for various labour market activities. Table XIII indicates the distribution of graduates (excluding post-graduate completions) by the occupational classifications that are most closely related to their field of study. The major groups shown in Table XIII include all levels of preparation from professional to skill development. The occupational area in which is to be found the largest number of graduates is Medicine and Health Services. This is closely followed by Teaching. Occupations at the professional, semi-professional and technical level in Natural Sciences and Social Sciences have a significant percentage of the total. Clerical and related occupations have a higher percentage of the total than the occupations in Natural Sciences and Social Sciences but the graduates hereof are generally at the skilled and semi-skilled level. Distribution beyond these areas is relatively even with the exception of Fishing, Hunting and Related Occupations; Occupations in Religion, and Processing Occupations. These three exceptions receive an insignificant proportion of the total distribution.

A more detailed breakdown of the graduation distribution by occupational classification is presented in Table XIV, Appendix A, page 118. Where a significant distribution occurs, the breakdown is shown by a four digit code. In those instances where the number of

T A B L E XIII

GRADUATION DISTRIBUTION BY MAJOR GROUP OF OCCUPATIONAL CLASSIFICATION(1) - 1970

Code	Major Group	Number of Graduates	Percent of Total
11	Managerial, Administrative and Related Occupations	480	3.49
21	Occupations in Natural Sciences, Engineering and Mathematics	1,602	11.63
23	Occupations in Social Sciences and Related Fields	1,593	11.57
25	Occupations in Religion	9	.06
27	Teaching and Related Occupations	1,886	13.70
31	Occupations in Medicine and Health	2,044	14.85
33	Artistic, Literary, Performing Arts and Related Occupations	266	1.93
37	Occupations in Sport and Recreation	174	1.26
41	Clerical and Related Occupations	1,864	13.54
51	Sales Occupations	237	1.72
61	Service Occupations	180*	1.31
71	Farming, Horticultural and Animal Husbandry Occupations	198	1.44
73	Fishing, Hunting and Related Occupations	13	.09
75	Forestry and Logging Occupations	692	5.03
77	Mining and Quarrying Including Oil and Gas Field Occupations	256*	1.86
81/82	Processing Occupations	5	.04
83	Machining and Related Occupations	344*	2.50
85	Product Fabricating, Assembling and Repairing Occupations	1,033	7.50
87	Construction Trades Occupations	786	5.71
91	Transport Equipment Operating Occupations	59	.43
93	Materials Handling and Related Occupations, n.e.c.	-	-
95	Other Crafts and Equipment Operating Occupations	47	.34
99	Occupations, Not Elsewhere Classified	-	-
	Totals	13,768	100.0

(1) From Canadian Classification and Dictionary of Occupations

* A number of graduates of short courses are not included.

graduates is not significant, the breakdown is shown by a three digit code. The actual number of graduates in each instance is probably more significant than the percent of total shown. In either instance however, it is possible to relate the number of professional graduates to the number of support staff graduates in related occupational areas.

Natural Sciences, Engineering and Mathematics. A further breakdown of the number and percentage distribution of graduates in occupations in Natural Sciences, Engineering and Mathematics only is indicated in Table XV. This table indicates the percentage of graduates in Natural Sciences, Engineering and Mathematics distributed according to the specific subject of study, such as Chemistry, Geology, Physics and others. This breakdown more specifically identifies the number of, and distribution of professional graduates relative to technologists and technicians. The number of professional graduates is 884 and the number of support staff is 718, a ratio of 1:0.81. Only in the case of architects and engineers does the number of technologists, technicians and support staff exceed the number of professional graduates.

Social Sciences. A similar breakdown of the number and percentage distribution of graduates in Social Sciences is indicated in Table XVI. In the case of Social Sciences the number of professional graduates is 840 and the number of support staff is 753, a ratio of 1:0.90. However, in the case of Library, Museum and Archival Sciences, there is no support staff graduating to be available to the professional.

Medicine and Health (Services). More detail of the number and percentage distribution of graduates by selected occupational classification

is shown in Table XVII. This table shows that the majority of graduates in Medicine and Health (Services) are nurses and nursing assistants, nursing aides and orderlies. The professional graduates total 208 and the support staff graduates total 1839, a ratio of 1:9. This indicates that the ratio of support staff to physicians, surgeons, dentists and pharmacists is more than adequate. The question is, whether or not the total number of professionals is sufficient to meet the needs of the community.

TABLE XV

GRADUATION DISTRIBUTION IN NATURAL SCIENCES, ENGINEERING AND MATHEMATICS, A SELECTED OCCUPATIONAL CLASSIFICATION WITH MAJOR, MINOR AND UNIT GROUPS - 1970

Code	Group	Number of Graduates	Percent of Total
21	OCCUPATIONS IN NATURAL SCIENCES, ENGINEERING AND MATHEMATICS		
211	Physical Sciences		
2111	Chemists	104	6.49
2112	Geologists	40	2.50
2113	Physicists	42	2.62
2114	Meteorologists	-	-
2117	Physical Sciences Technologists and Technicians	-	-
2119	Occupations in Physical Sciences, n.e.c.	86	5.37
213	Life Sciences		
2131	Agriculturists and Related Scientists	80	4.99
2133	Biologists and Related Scientists	208	12.98
2135	Life Sciences Technologists and Technicians	64	4.00
2139	Occupations in Life Sciences, n.e.c.	3	.19
214/215	Architects and Engineers		
2141	Architects	-	-
2142	Chemical Engineers	60	3.75
2143	Civil Engineers	66	4.12
2144	Electrical Engineers	76	4.74
2145	Industrial Engineers	-	-
2147	Mechanical Engineers	73	4.56
2151	Metallurgical Engineers	8	.50
2153	Mining Engineers	5	.31
2154	Petroleum Engineers	-	-
2155	Aeronautical Engineers	-	-
2157	Nuclear Engineers	-	-
2159	Architects and Engineers, n.e.c.	-	-
216	Other Occupations in Architecture and Engineering		
2160	Supervisors, Other Occupations in Architecture and Engineering	-	-
2161	Surveyors	-	-
2163	Draughtsmen	35	2.19
2165	Architectural and Engineering Technologists and Technicians	485	30.27

T A B L E XV (continued)

Code	Group	Number of Graduates	Percent of Total
218	Occupations in Mathematics, Statistics, Systems Analysis and Related Fields		
2181	Mathematics, Statisticians and Actuaries	76	4.74
2183	Systems Analysts, Computer Programmers and Related Occupations	46	2.87
2189	Occupations in Mathematics, Statistics, Systems Analysis and Related Fields, n.e.c.	45	2.81
Total		1,602	100.0

TABLE XVI

GRADUATION DISTRIBUTION IN SOCIAL SCIENCES, A SELECTED OCCUPATIONAL CLASSIFICATION WITH MAJOR, MINOR AND UNIT GROUPS - 1970

Code	Group	Number of Graduates	Percent of Total
23	OCCUPATIONS IN SOCIAL SCIENCES AND RELATED FIELDS		
231	Occupations in Social Sciences		
2311	Economists	133	8.35
2313	Sociologists, Anthropologists and Related Social Scientists	377	23.67
2315	Psychologists	187	11.74
2319	Occupations in Social Sciences, n.e.c.	570	35.78
233	Occupations in Social Work and Related Fields		
2331	Social Workers	-	-
2333	Occupations in Welfare and Community Services	-	-
2339	Occupations in Social Work and Related Fields	162	10.17
234	Occupations in Law and Jurisprudence		
2341	Judges and Magistrates	-	-
2343	Lawyers and Notaries	103	6.46
2349	Occupations in Law and Jurisprudence	-	-
235	Occupations in Library, Museum and Archival Sciences		
2350	Supervisors: Occupations in Library, Museum and Archival Sciences	-	-
2351	Librarians and Archivists	40	2.51
2353	Technicians in Library, Museum and Archival Sciences	-	-
2359	Occupations in Library, Museum and Archival Sciences, n.e.c.	-	-
239	Other Occupations in Social Sciences and Related Fields		
2391	Educational and Vocational Counsellors	-	-
2399	Other Occupations in Social Sciences and Related Fields	21	1.32
Total		1,593	100.0

T A B L E XVII

GRADUATION DISTRIBUTION IN HEALTH AND MEDICINE,
A SELECTED OCCUPATIONAL CLASSIFICATION
WITH MAJOR, MINOR AND UNIT GROUPS - 1970

Code	Group	Number of Graduates	Percent of Total
31	OCCUPATIONS IN MEDICINE AND HEALTH		
311	Health Diagnosing and Treating Occupations		
3111	Physicians and Surgeons	107	5.09
3113	Dentists	42	2.06
3115	Veterinarians	-	-
3117	Osteopaths and Chiropractors	-	-
3119	Health Diagnosing and Treating Occupations, n.e.c.	43	2.10
313	Nursing, Therapy and Related Assisting Occupations		
3130	Supervisors: Nursing, Therapy and Related Assisting Occupations	215	10.52
3131	Nurses, Graduate	777	38.01
3133	Nurses-in-Training in Hospitals	-	-
3135	Nursing Assistants, Nursing Aides and Orderlies	538	26.32
3137	Physical and Occupational Therapists	15	.73
3139	Nursing, Therapy and Related Assisting Occupations, n.e.c.	-	-
315	Other Occupations in Medicine and Health		
3151	Pharmacists	59	2.89
3152	Dietitians and Nutritionists	-	-
3153	Optometrists	-	-
3154	Dispensing Opticians	-	-
3155	Medical Technologists and Technicians	142	6.95
3157	Dental Hygienists, Assistants and Technicians	74	3.62
3159	Other Occupations in Medicine and Health, n.e.c.	35	1.71
Total		2,044	100.0

CHAPTER IV

SUBJECTS OF STUDY BY INSTITUTION

An outline of the subjects of study available at the various educational institutions is indicated in Tables XVIII to XXXIII, Appendix A, page 65. It is possible, by consulting these tables, to determine the composition of the subject of study offered by an educational institution in terms of required courses, both prescribed and optional and in terms of the total instructional time provided.

In the case of universities and apprenticeship the total instructional time provided is expressed in years whereas the other educational institutions have indicated the instructional period in hours. Generally 900 hours equates to one year but there is some variation from one institution to another on the number of hours that constitutes a year. The number of courses required by different institutions to complete a program is not necessarily comparable because some courses are of short duration, such as those covered in quarter periods, while others are of longer duration such as those covered in a full term. The number of courses required does give some indication of the measure of prescribed study relative to the amount of free choice or optional study available within the institution. With the exception of the universities, the general picture is one of considerable emphasis on prescribed requirements for completion of programs. Where the subject is offered at different levels, the difference may be identified by the program. At the Northern and Southern Alberta Institutes of Technology a number of subjects are offered as two and three year programs, where the three year program

includes a pre-technology year. The distinction in these instances is shown in the number of courses required and the total hours of instruction.

It is again pointed out that the public Colleges provide instruction in university transfer subjects in addition to the subjects shown.

CHAPTER V

SPACE, UTILIZATION AND EXPENDITURES

The assignable instructional area and the number of student stations available to produce such graduates has been determined and is outlined in Table XXXIV. Table XXXIV differentiates between classroom area, laboratory area and shop area. The definition of these areas has been left to the interpretation of the institution. Each institution identified what it considered to be its own classroom space within a building or by groups of buildings. Similarly in the case of laboratories and shops. As a guide however, it was visualized that classroom space was that space which was identifiable as scheduled instructional space with some area limitation. This differentiates classrooms, laboratories and shops from what might be termed total instructional or learning area, wherein learning area would include any space where a teaching-learning relationship could be carried on. Table XXXIV provides only defined classroom area with some physical limit confining the space. The same situation was applied to laboratories and shop spaces.

Student stations likewise, were not defined but left to be identified by the institution. Again as a guide, it was visualized that a student station would be that area within an identifiable scheduled space, such as a classroom laboratory or shop that was assignable to a student. On this basis, the total areas and the total number of student stations available, permit the calculation of the average size of student station in square feet for each of the major educational institutions noted. As would be expected, an

T A B L E XXXIV

ASSIGNABLE INSTRUCTIONAL AREA AND STUDENT STATIONS IN EACH INSTITUTION BY CLASSROOMS, LABORATORIES AND SHOPS - 1970

61	Classroom		Average Sq.Ft. Per Station	Laboratory		Average Sq.Ft. Per Station	Shop		Average Sq.Ft. Per Station
	Area*	Student Stations		Area*	Student Stations		Area*	Student Stations	
University of Alberta	240,906	17,694	13.6	228,730	5,036	45.4			
University of Calgary	159,107	10,048	15.8	104,345	2,056	50.7			
The University of Lethbridge	34,699	1,487	23.5	17,316	271	63.9			
Northern Alberta Institute of Technology	74,584	3,993	18.7	150,960	2,673	56.5	83,793	609	137.6
Southern Alberta Institute of Technology	169,424	5,759	29.4	108,136	2,378	45.5	75,347	528	142.7
Grande Prairie Regional College	6,790	342	19.8	5,641	205	27.5			
Lethbridge Community College	19,174	898	21.3	13,391	288	46.5	30,803	153	201.3
Medicine Hat College	12,180	621	19.6	3,024	81	37.3			
Mount Royal College	N.A.	2,980	-	N.A.	152	-			
Red Deer College	23,598	1,091	21.6	10,156	233	43.5			
Agricultural & Vocational College Fairview	12,986	388	33.5	6,652	110	60.5	19,077	80	238.5
Agricultural & Vocational College Olds	39,409	1,322	29.8	11,865	124	95.7	27,332	88**	310.6**
Agricultural & Vocational College Vermilion	18,158	603	30.1	7,296	142	51.4	18,899	146	129.4

T A B L E XXXIV (continued)

	Classroom		Average Sq.Ft. Per Station	Laboratory		Average Sq.Ft. Per Station	Shop		Average Sq.Ft. Per Station
	Area*	Student Stations		Area*	Student Stations		Area*	Student Stations	
Alberta Vocational Centre, Calgary	6,121	228	26.8	-	-	-	-	-	-
Alberta Vocational Centre, Edmonton	5,700	162	35.2	3,400	54	63.0	-	-	-
Alberta Vocational Centre, Fort McMurray	7,448	164	45.4	2,980	54	55.2	12,280	89	138.0
Nursing Aide Schools, Calgary & Edmonton	3,810	150	25.4	4,733	180	26.3	-	-	-
Forestry School	1,416	53	26.7	1,947	68	28.6	-	-	-
Alberta Hospitals	3,154	205	15.4	2,436	131	18.6	-	-	-
Apprenticeship	-	-	-	-	-	-	-	-	-
Banff School of Fine Arts	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Division of Vocational Education	-	-	-	-	-	-	-	-	-
Hospital Nursing Schools	30,420	1,727	***	9,336	199	***	-	-	-
Lab & X-Ray School	939	32	29.3	598	12	49.8	-	-	-
Petroleum Industry Training School	-	-	-	-	-	-	-	-	-
Totals	870,223	49,947		692,942	14,447		267,531	1,693	

* In square feet.

** Estimated.

*** Incomplete. See Table XXXVI.

increasing difference exists between the average size of student stations per classroom and laboratory and shop, where these are present. An examination of Table XXXIV also reveals a variance in the size of student stations among similar institutions. The descending rank order of size of classroom student stations shows the Alberta Vocational Centre Fort McMurray, Alberta Vocational Centre Edmonton, Agricultural and Vocational College Fairview, Agricultural and Vocational College Vermilion, Agricultural and Vocational College Olds, Southern Alberta Institute of Technology and the Laboratory & X-Ray School, all exceeding twenty-nine square feet per student station. At the other end of the scale, the University of Alberta and The University of Calgary show 13.6 and 15.8 square feet per student station respectively.

In the case of laboratory and shop student station size there is less variance among institutions. The exception is at the Agricultural and Vocational College Olds and the difference is accounted for by large animal laboratory areas which significantly affect the calculations.

The distribution of assignable instructional area and of student stations for groups of institutions is shown in Table XXXV. The total instructional area for all institutions is 1,844,040 square feet. This total is made up of 870,223 square feet of classroom area which is 47% of the total and 692,942 square feet of laboratory area which is 38% of the total, and 267,531 square feet of shop area which is 15% of the total. The total number of student stations for all institutions is 66,835. Of the total instructional area and student stations, the universities account for 42.6% of the total instructional area and 54.8% of the student stations. With these facilities they provide

T A B L E XXXV

ASSIGNABLE INSTRUCTIONAL AREA AND STUDENT STATIONS FOR GROUPS OF INSTITUTIONS
BY CLASSROOMS, LABORATORIES AND SHOPS - 1970

	Classroom Area*	Student Stations	Lab. Area*	Student Stations	Shop Area*	Student Stations	Total Instructional Area *	Total Student Stations	Percent of Total Instructional Area	Percent of Total Student Stations
Universities	434,912	29,229	350,391	7,363	-	-	785,303	36,592	42.6	54.8
Apprenticeship	-	-	-	-	-	-	-	-	-	-
Technical Institutes	244,008	9,752	259,096	5,051	159,140	1,137	662,244	15,941	35.9	23.8
Colleges	61,742	5,932	32,212*	959	30,803	153	124,757*	7,044	6.8	10.5
Agricultural Colleges	70,553	2,313	25,813	376	65,308	314	161,674	3,003	8.8	4.5
Division and Vocational Centres	19,269	554	6,380	108	12,280	89	37,929	751	2.0	1.1
Nursing and Related Schools	38,323**	2,114**	17,103**	522**	-	-	68,770	3,384	3.7	5.1
Others	1,416	53	1,947	68	-	-	3,363	121	.2	.2
Total	870,223	49,947	692,942	14,447	267,531	1,693	1,844,040	66,835	100.0	100.0

* In square feet.

** Incomplete data.

38.1% of all graduates not including post-graduate completions. The percentage distribution of graduates is calculated from the data in Table IV, page 26 . The technical institutes account for 35.9% of the total instructional area and 23.8% of student stations and account for only 10.6% of all graduates. The public colleges account for 6.8% of total instructional area and 10.5% of student stations, whereas the agricultural colleges account for 8.8% of the total instructional area and 4.5% of student stations and account for 3.9% and 2.2% of all graduates respectively. The balance of instructional area and student stations is allocated between the Division and Alberta Vocational Centres and the nursing and related schools and other institutions. In total these institutions account for 5.9% of the total instructional area and 6.4% of student stations.

The total student stations is made up of 49,947 classroom student stations which is 75% of the total and 14,447 laboratory student stations making up 22% of the total and 1,693 shop student stations which is only 3% of the total.

In addition, apprenticeship graduates constitute 14.1% of all graduates. Apprenticeship training is distributed among the technical institutes, the public colleges and agricultural colleges, with the majority of training being taken at the technical institutes. Further detail in instructional area and student stations in hospital nursing schools is shown in Table XXXVI.

Utilization of Facilities. The relative utilization of facilities at the major educational institutions has been examined through a room-period utilization index measure. A number of the institutions providing

T A B L E XXXVI

ASSIGNABLE INSTRUCTIONAL AREA AND STUDENT STATIONS IN HOSPITAL NURSING SCHOOLS BY CLASSROOMS AND LABORATORIES - 1970

	Instructional Area*			Student Stations		
	Classroom	Lab	Total	Classroom	Lab	Total
Archer Memorial Hospital School of Nursing	1,276	400	1,676	44	4	48
Calgary General Hospital School of Nursing	12,546	1,316	13,862	674	36	710
Edmonton General (College St. Jean) School of Nursing	-	-	N.A.	-	-	N.A.
Foothills Hospital School of Nursing	-	-	13,347	-	-	604
Galt Hospital School of Nursing	2,223	1,989	4,212	130	40	170
Holy Cross Hospital School of Nursing	3,511	696	4,207	190	30	220
Medicine Hat Hospital School of Nursing	-	-	N.A.	-	-	N.A.
Misericordia Hospital School of Nursing	4,141	2,405	6,546	274	46	320
Royal Alexandra Hospital School of Nursing	5,129	2,530	7,659	310	43	353
St. Michael's Hospital School of Nursing	1,594	-	1,594	105	-	105
University of Alberta Hospital School of Nursing	-	-	N.A.	-	-	144
Total	30,420	9,336	53,103	1,727	199	2,674

* In square feet.

training have not been included in the summary as shown in Table XXXVII either because of the very limited space involved or, as in the case of hospital nursing schools, the difficulty in identifying instructional space distributed over a large area.

The determination of room-period utilization was based on a fifty hour week which was an arbitrary time period chosen to create a standard measurement for comparison purposes. The fifty hours figure was not related directly to the time period that was indicated as the weekly class schedule by each institution. In fact, the weekly class schedule indicated by institutions varied from 28 to 54 with an average of 38. Therefore, the Room-Period Utilization Index used in Table XXXVII and Table XXXVIII indicates the relative position of one institution to another in the matter of the efficiency with which space is used based on a fifty hour weekly schedule.

Comparative data has been presented separately on classrooms and laboratories and shops. Table XXXVII and Table XXXVIII indicate a differential in the use of classroom space between an index (median) of 27.5 and 80.5. It has not been suggested that there is an ideal index. Over-utilization can have as undesirable consequences as can under-utilization. But such a large spread between the minimum and maximum does suggest an examination of the reason for the relative high utilization in some institutions and the relative low utilization in others. The same observation is made with respect to laboratory use. The differential is 14.5 to 85, and while a greater differential may be expected in the use of laboratories the difference shown is very large.

T A B L E XXXVII

MEASUREMENTS OF ROOM PERIOD UTILIZATION INDEX

	University of Alberta			The University of Calgary			The University of Lethbridge		N.A.I.T.			S.A.I.T.			Grande Prairie Regional College	
	I *	II*	III*	I	II	III	I	III	I	III	IV	I	III	IV	I	III
MODE	45	35	29.5	35	25	65	65	15	65	55	45	35	39.5	55	45	15
MEDIAN	48.6	29.5	27.8	47	26.5	49.5	59.8	29.5	59.9	41	47.5	40.7	41.5	52	44.5	17.8
MEAN	32.8	16.8	22.2	39.3	23.0	44.1	49.5	41.3	57.5	42.1	44.8	43.8	38.2	49.7	41.8	27.7

* I General Purpose Classrooms

II Special Purpose Classrooms

III Laboratories

IV Shops

T A B L E XXXVII (continued)

	Lethbridge Community College			Medicine Hat College		Mount Royal College		Red Deer College		Agricultural & Vocational College Fairview			Agricultural & Vocational College Olds		
	I*	III*	IV*	I	III	I	III	I	III	I	III	IV	I	III	IV
MODE	75	45	25	65	25	85	85	49.5	55	25	15	-	35	55	75
MEDIAN	57	42.5	26.1	61.5	29.5	80.5	85	51.6	44.5	27.5	14.5	39.5	36.1	47	74.5
MEAN	51.7	39.8	34.7	51.6	32.5	66.4	54.3	52.1	38.9	25.3	15.7	34.5	33.5	27.8	N.A.

* I General Purpose Classrooms

II Special Purpose Classrooms

III Laboratories

IV Shops

T A B L E XXXVII (continued)

	Agricultural & Vocational College Vermilion			A.V.C. Calgary	A.V.C. Edmonton		A.V.C. Fort McMurray			Nursing Aide Schools		Forestry School	
	I *	III*	IV*	I	I	III	I	III	IV	I	III	I	III
MODE	NOT AVAILABLE			65	35	35	75	75	75	65	65	-	-
MEDIAN	NOT AVAILABLE			64.5	42	32	72.3	72	64.5	64.5	64.5	34.5	39.5
MEAN	NOT AVAILABLE			60.0	40.0	22.7	65.4	66.0	60.4	60.0	60.0	40.0	35.0

* I General Purpose Classrooms

II Special Purpose Classrooms

III Laboratories

IV Shops

T A B L E XXXVIII

RANK ORDER OF ROOM-PERIOD UTILIZATION INDEX

	Classroom Utilization Index Median	Classroom Rank	Laboratory Utilization Index Median	Laboratory Rank
Mount Royal College	80.5	1	85	1
A.V.C. Fort McMurray	72.3	2	72	2
A.V.C. Calgary	64.5	3	-	-
Nursing Aide Schools	64.5	4	64.5	3
Medicine Hat College	61.5	5	29.5	11
N.A.I.T.	59.9	6	41	8
The University of Lethbridge	59.8	7	29.5	12
Lethbridge Community College	57	8	26.1	14
Red Deer College	51.6	9	44.5	6
University of Alberta	48.6(29.5)*	10	27.8	13
The University of Calgary	47 (26.5)*	11	49.5	4
Grande Prairie Regional College	44.5	12	17.8	15
A.V.C. Edmonton	42	13	32	10
S.A.I.T.	40.7	14	41.5	7
Agricultural & Vocational College Olds	36.1	15	47	5
Forest Technology School	34.5	16	39.5	9
Agricultural & Vocational College Fairview	27.5	17	14.5	16

* Special Purpose classrooms.

T A B L E XXXIX

OPERATIONAL EXPENDITURE BY INSTITUTION
FOR FISCAL YEAR ENDING MARCH 31, 1971
(thousands of dollars)

	Expenditure	Total	Percent of Total
University of Alberta	61,556		
The University of Calgary	29,808		
The University of Lethbridge	4,598		
		95,962	71
Apprenticeship (net)	918		
		918	1
Grande Prairie Regional College	745		
Lethbridge Community College	1,902		
Medicine Hat College	812		
Mount Royal College	4,043		
Red Deer College	1,606		
		9,108	7
Northern Alberta Institute of Technology	10,091		
Southern Alberta Institute of Technology	9,614		
		19,705	15
Agricultural & Vocational College Fairview	803		
Agricultural & Vocational College Olds	1,545		
Agricultural & Vocational College Vermilion	1,008		
		3,356	2.5

T A B L E XXXIX (continued)

Institution	Expenditure	Total	Percent of Total
Division of Vocational Education			
Alberta Vocational Centre Calgary Alberta Vocational Centre Edmonton Alberta Vocational Centre Fort McMurray (net)	4,039	4,039	3.0
Forest Technology School	274	274	.2
Nursing Aides Schools (net)	257	257	.1
Lab & X-Ray School	49	49	.01
Hospital Nursing Schools	-	-	-
Banff School of Fine Arts	308	308	.2
Total		133,976	

The space utilization index is most valuable in this study in identifying the need for further examination of this factor. An attempt to include an index of student station utilization in the study was deferred because of the difficulty in obtaining the required basic data. However, student station utilization should be included in any further investigation of the efficiency and use of space.

Expenditures. The cost of operating Albera's post-secondary major educational institutions, excluding capital expenditures is significant and is shown in Table XXXIX for the fiscal year ending March 31, 1971. The data for Table XXXIX is from the Public Accounts of the Province of Alberta for the Year Ended March 31, 1971, and from the Alberta Colleges Commission Second Annual Report - 70-71. Of the total expenditure of $133,976,000, there is $95,962,000 or 71% accounted for by the universities; 15% is accounted for by the technical institutes; 7% by the public colleges and 2.5% by the agricultural colleges; 1% of the total amount is expended for apprenticeship training and 3% for the Division of Vocational Education and Alberta Vocational Centres; 0.1% is required for the training of nursing aides and the balance is expended by the other institutions. In the case of apprenticeship training, and the training provided by the Division of Vocational Education and the Alberta Vocational Centres, and the training of Nursing Aides, the amount paid out to trainees in the form of training allowances, grants and prizes has been deducted to show only a net operational expenditure.

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A P P E N D I X A

Table I, Table XIV

and

Tables XVIII to XXXIII

T A B L E I

SUBJECTS, SOURCES AND GRADUATES OF MANPOWER DEVELOPMENT OPPORTUNITIES IN ALBERTA - 1970

Subject	Code[1]	Program[2]	Instructional Period[3] Provided	Major Educational Institution	Number of Graduates in 1970
A -					
1. Advertising Art	33	Diploma of Applied Arts	3600	Southern Alberta Institute of Technology	14
2. Aeronautical Engineering Technology	2165	Diploma of Technology	2592	Southern Alberta Institute of Technology	2
3. Agri-Automation	7111	Diploma	1800	Agricultural & Vocational College Vermilion	-
4. Agri-Business	7111	Associate Diploma	912	Mount Royal College	-
		Diploma	-[4]	Agricultural & Vocational College Olds	3
		Certificate	480	Mount Royal College	-

[1] Source: Canadian Classification and Dictionary of Occupations.

[2] For University post-graduate programs see Table VI, page 31.

[3] In hours unless otherwise indicated. Generally 900 hours of instruction equals one year. Instructional periods are subject to change by the institution from year to year.

[4] Discontinued.

T A B L E I (continued)

Subject	Code	Program	Instructional Period Provided	Major Educational Institution	Number of Graduates in 1970
5. Agri-Chemicals	7111	Diploma	1800	Agricultural & Vocational College Vermilion	-
6. Agriculture	2131	B.Sc Degree	4 yrs	University of Alberta	16
7. Agricultural Economics	2131	B.Sc Degree	4 yrs	University of Alberta	16
8. Agricultural Equipment Technology	7111	Diploma	1680	Agricultural & Vocational College Olds	18
9. Agricultural Mechanics	7111	Diploma	1800	Agricultural & Vocational College Fairview	2
			1800	Agricultural & Vocational College Vermilion	4
10. Agricultural Mechanization	2131	B.Sc Degree	4 yrs	University of Alberta	11
11. Agricultural Production	7111	Diploma	1800	Agricultural & Vocational College Fairview	3
12. Air Conditioning and Refrigeration Technology	2165	Diploma of Technology	2028	Northern Alberta Institute of Technology	10
			1860	Southern Alberta Institute of Technology	3
13. Aircraft Maintenance Technology	8582	Diploma of Technology	1915	Southern Alberta Institute of Technology	10

TABLE I (continued)

Subject	Code	Program	Instructional Period Provided	Major Educational Institution	Number of Graduates in 1970
14. Animal Reproduction	7113	Diploma	1800	Agricultural & Vocational College Vermilion	1
15. Animal Science	2131	B.Sc Degree	4 yrs	University of Alberta	21
16. Anthropology	2313	B.A. (Honors)	4 yrs	University of Alberta	1
			4 yrs	The University of Calgary	-
		B.A. Degree	4 yrs	University of Alberta	23
			4 yrs	The University of Calgary	2
			4 yrs	The University of Lethbridge	-
17. Appliance Serviceman	8535	Certificate of Qualification	4 yrs	Apprenticeship,[5] (S.A.I.T.)[6]	8
18. Applied Arts & General Crafts	33	Diploma of Applied Arts	3600	Southern Alberta Institute of Technology	4

[5] Apprenticeship & Tradesmen's Qualification Branch, Department of Labour indicated hereinafter as - Apprenticeship.

[6] (S.A.I.T.) -- Southern Alberta Institute of Technology - indicates where apprenticeship training is taken.

T A B L E I (continued)

Subject	Code	Program	Instructional Period Provided	Major Educational Institution	Number of Graduates in 1970
19. Applied Mathematics	2181	B.Sc (Honors)	4 yrs	University of Alberta[7]	-[7]
			4 yrs	The University of Calgary	-
		B.Sc Degree	4 yrs	The University of Calgary	1
		B.A. (Honors)	4 yrs	The University of Calgary	-
		B.A. Degree	4 yrs	The University of Calgary	-
20. Applied Physics	2119	B.Sc. (Honors)	4 yrs	University of Alberta (8)	-[8]
21. Applied Social Science	2339	Associate Diploma	960	Mount Royal College	25
22. Archaeology	2119	B.A. (Honors)	4 yrs	The University of Calgary	-
		B.A. Degree	4 yrs	The University of Calgary	5
23. Architecture	2165	Certificate	528	Mount Royal College	1
24. Architectural Drafting	2165	Certificate	704	Lethbridge Community College	5

[7] See Mathematics.

[8] See Physics.

T A B L E I (continued)

Subject	Code	Program	Instructional Period Provided	Major Educational Institution	Number of Graduates in 1970
25. Architectural Technology	2165	Diploma of Technology	2184-3012[9]	Northern Alberta Institute of Technology	22
			1820-2880[9]	Southern Alberta Institute of Technology	23
26. Art (Fine)	33	B.F.A. Degree	4 yrs	University of Alberta	-[10]
			4 yrs	The University of Calgary	7
27. Art (General)	2339	B.A. (Honors)	4 yrs	University of Alberta	-
		B.A. Degree	3 yrs	University of Alberta	83
			4 yrs	The University of Calgary	3
			4 yrs	The University of Lethbridge	3
28. Arts and Science	2339	Diploma	1680	Red Deer College	-
29. Artificial Insemination	7199	Certificate	160	Agricultural & Vocational College Vermilion	27
30. Auto Body Mechanic	8581	Certificate of Proficiency	4 yrs	Apprenticeship, (N.A.I.T.)[11] (S.A.I.T.)	86

[9] Two and three year programs.

[10] See Drama.

[11] (N.A.I.T.) -- Northern Alberta Institute of Technology - indicates where apprenticeship training is taken.

T A B L E I (continued)

Subject	Code	Program	Instructional Period Provided	Major Educational Institution	Number of Graduates in 1970
31. Automated Data Processing	41	Diploma	1488	Lethbridge Community College	6
32. Automotives	8589	Certificate	736	Lethbridge Community College	9
33. Automotive Mechanics	8589	Certificate	750	Alberta Vocational Centre Fort McMurray	12
34. Automotive Service Technology	8589	Diploma of Technology	1822	Southern Alberta Institute of Technology	12
35. Aviation	91	Associate Diploma	912	Mount Royal College	-
B -					
36. Baker	61	Certificate of Qualification	3 yrs	Apprenticeship, (N.A.I.T.)	6
37. Banking	41	Certificate	1001	Northern Alberta Institute of Technology	17
38. Banking & Financial Management	117	Diploma of Applied Arts	1870	Northern Alberta Institute of Technology	3
39. Barber	61	Certificate of Proficiency	-(12)	Apprenticeship, Dept. of Labour	-(12)

(12) Government examination and licensing only. - See Table VIII, page 35.

T A B L E I (continued)

Subject	Code	Program	Instructional Period Provided	Major Educational Institution	Number of Graduates in 1970
40. Basic Financial Controls	41	Certificate	20	Division of Vocational Education	29
41. Beautician	61	Certificate of Proficiency	-(12)	Apprenticeship, Dept. of Labour	-(12)
42. Biochemistry	2111	B.Sc (Honors)	4 yrs	University of Alberta	3
			4 yrs	The University of Calgary	2
		B.Sc Degree	3 yrs	University of Alberta	2
			4 yrs	The University of Calgary	-
43. Biology	2133	B.Sc Degree	3 yrs	University of Alberta	28
44. Biological Sciences	2133	B.A. Degree	4 yrs	The University of Lethbridge	15
	2135	Diploma of Technology	2082	Northern Alberta Institute of Technology	27
45. Bookkeeping	41	Certificate	900	Alberta Vocational Centre Calgary	6
46. Bookkeeping for Small Businesses	41	Certificate	28	Division of Vocational Education	252

T A B L E I (continued)

Subject	Code	Program	Instructional Period Provided	Major Educational Institution	Number of Graduates in 1970
47. Botany	2133	B.Sc (Honors)	4 yrs	University of Alberta	1
			4 yrs	The University of Calgary	-
		B.Sc Degree	3 yrs	University of Alberta	1
			4 yrs	The University of Calgary	4
48. Bricklayer	8782	Certificate of Qualification	4 yrs	Apprenticeship, (N.A.I.T.)	16
49. Broadcasting	33	Associate Diploma	864	Mount Royal College	8
50. Building Construction	8780	Diploma of Technology	1968	Northern Alberta Institute of Technology	11
	8798	Certificate	750	Alberta Vocational Centre Fort McMurray	6
51. Building Materials Merchandising	51	Diploma	1800	Agricultural & Vocational College Vermilion	2
52. Business	113/114	B.Comm Degree	4 yrs	The University of Calgary	61

T A B L E I (continued)

Subject	Code	Program	Instructional Period Provided	Major Educational Institution	Number of Graduates in 1970
53. Business Administration	11''	Diploma	1216	Grande Prairie Regional College	-
			1941	Northern Alberta Institute of Technology	41
			2100	Red Deer College	12
			960	Mount Royal College	20
			1828	Southern Alberta Institute of Technology	53
			900	Medicine Hat College	2
		Certificate	624	Grande Prairie Regional College	10
			1120	Red Deer College	28
			480	Mount Royal College	7
			450	Medicine Hat College	12
54. Business Development	41	Certificate	20	Division of Vocational Education	116
55. Business Law	41	Certificate	20	Division of Vocational Education	95
56. Career Driving	91	Certificate	450	Alberta Vocational Centre Fort McMurray	17
57. Carpenter	8781	Certificate of Qualification	4 yrs	Apprenticeship, (N.A.I.T.) (S.A.I.T.)	91

T A B L E I (continued)

Subject	Code	Program	Instructional Period Provided	Major Educational Institution	Number of Graduates in 1970
58. Carpenter Journeyman's Upgrading	8798	Certificate	350	Alberta Vocational Centre Fort McMurray	14
59. Ceramics	33	Senior Certificate	180	The Banff School of Fine Arts	7
		Junior Certificate	180	The Banff School of Fine Arts	14
60. Chemical Engineering	2142	B.Sc Degree	4 yrs	University of Alberta	43
			4 yrs	The University of Calgary	17
61. Chemical Technology	2165	Diploma of Technology	2124	Northern Alberta Institute of Technology	28
			1800	Southern Alberta Institute of Technology	25
62. Chemical Research Technology	2165	Diploma of Technology	2364	Northern Alberta Institute of Technology	-
63. Chemistry	211'	B.Sc (Honors)	4 yrs	University of Alberta	9
			4 yrs	The University of Calgary	2
		B.Sc Degree	3 yrs	University of Alberta	59
			4 yrs	The University of Calgary	22
		B.A. Degree	4 yrs	The University of Lethbridge	5

T A B L E I (continued)

Subject	Code	Program	Instructional Period Provided	Major Educational Institution	Number of Graduates in 1970
64. Civil Engineering	2143	B.Sc Degree	4 yrs	University of Alberta	47
			4 yrs	The University of Calgary	19
65. Civil Technology	2165	Diploma of Technology	1956	Northern Alberta Institute of Technology	38
66. Classics	2319	B.A. (Honors)	4 yrs	University of Alberta	2
			4 yrs	The University of Calgary	1
		B.A. Degree	3 yrs	University of Alberta	6
			4 yrs	The University of Calgary	-
67. Classics, Ancient History and Classical Archaeology	2319	B.A. (Honors)	4 yrs	University of Alberta	-
68. Clerk Typist	41	Certificate	1500	Alberta Vocational Centre Fort McMurray	8
			1500	Agricultural & Vocational College Fairview	8
			1500	Agricultural & Vocational College Vermilion	18
			980	Alberta Vocational Centre Edmonton	65
			960	Alberta Vocational Centre Calgary	45
			480	Mount Royal College	6

T A B L E I (continued)

Subject	Code	Program	Instructional Period Provided	Major Educational Institution	Number of Graduates in 1970
69. Commerce	113/114	B.Comm Degree	4 yrs	University of Alberta	162
70. Commercial Baking	61	Diploma of Applied Arts	2448	Northern Alberta Institute of Technology	5
		Certificate	900	Northern Alberta Institute of Technology	3
			1400	Southern Alberta Institute of Technology	15
71. Commercial Cooking	61	Diploma of Applied Arts	2450	Northern Alberta Institute of Technology	13
			2100	Southern Alberta Institute of Technology	9
		Certificate	750	Alberta Vocational Centre Fort McMurray	5
			1024	Lethbridge Community College	4
72. Commercial Sign-Writing	33	Certificate	900	Northern Alberta Institute of Technology	9
73. Communications Electrician	8536	Certificate of Completion of Apprenticeship	4 yrs	Apprenticeship, (N.A.I.T.) (S.A.I.T.)	134
74. Comparative Literature	2319	B.A. (Honors)	4 yrs	University of Alberta	-
		B.A. Degree	3 yrs	University of Alberta	-

T A B L E I (continued)

Subject	Code	Program	Instructional Period Provided	Major Educational Institution	Number of Graduates in 1970
75. Computer Science	41	Associate Diploma	960	Mount Royal College	-
76. Computing Science	2183	B.Sc (Honors)	4 yrs	University of Alberta	14
			4 yrs	The University of Calgary	-
		B.Sc Degree	3 yrs	University of Alberta	27
			4 yrs	The University of Calgary	5
77. Computer Systems	2189	Diploma of Applied Arts	2134	Northern Alberta Institute of Technology	31
78. Computer Technology	2189	Diploma of Technology	2448	Southern Alberta Institute of Technology	14
79. Cook	61	Certificate of Qualification	3 yrs	Apprenticeship, (N.A.I.T.) (S.A.I.T.)	16
80. Correctional Careers	2339	Associate Diploma	1056	Mount Royal College	8
81. Credits & Collections	41	Certificate	20	Division of Vocational Education	51
82. Crop Production	2135	Diploma	1800	Agricultural & Vocational College Fairview	4
83. Custodial-Hospital Housekeeping	61	Certificate	64	Agricultural & Vocational College Vermilion	12

T A B L E I (continued)

Subject	Code	Program	Instructional Period Provided	Major Educational Institution	Number of Graduates in 1970
D -					
84. Dairy Production	7191	Certificate	160	Agricultural & Vocational College Vermilion	8
85. Day Care	61	Associate Diploma	1152	Mount Royal College	-
		Certificate	576	Mount Royal College	-
86. Dental Assisting	3157	Certificate	958	Northern Alberta Institute of Technology	40
87. Dental Auxilliary	3157	Diploma	2 yrs	University of Alberta	-
88. Dental Hygiene	3157	Diploma	2 yrs	University of Alberta	19
89. Dental Laboratory Technician	3157	Diploma of Technology	2028	Northern Alberta Institute of Technology	15
90. Dental Mechanic	3157	Certificate of Proficiency	-(12)	Apprenticeship, Dept. of Labour	-(12)
91. Dentistry	3113	D.D.S. Degree	4 yrs(13)	University of Alberta	42
92. Derrickman Technician	77	Certificate	240	Petroleum Industry Training Service	32
93. Diesel Mechanics	8589	Certificate	1380	Southern Alberta Institute of Technology	33

(13) Additional to a pre-dentistry program.

T A B L E I (continued)

Subject	Code	Program	Instructional Period Provided	Major Educational Institution	Number of Graduates in 1970
94. Dietary Technology	3159	Diploma of Applied Arts	1086[14]	Northern Alberta Institute of Technology	17
		Certificate	1211	Northern Alberta Institute of Technology	6
95. Dietary Service Technology	3159	Diploma of Applied Arts	1200[14]	Southern Alberta Institute of Technology	12
96. Dining Room Service	61	Certificate	360	Southern Alberta Institute of Technology	-[15]
97. Distributive (Marketing) Technology	117	Diploma of Applied Arts	1958	Northern Alberta Institute of Technology	39
98. Drafting Technology	2163	Diploma of Technology	2206-2970[9]	Northern Alberta Institute of Technology	18
			1820-2880[9]	Southern Alberta Institute of Technology	13

[14] In conjunction with a participating institution.

[15] Numbers not available from numerous short term courses.

T A B L E I (continued)

Subject	Code	Program	Instructional Period Provided	Major Educational Institution	Number of Graduates in 1970
99. Drafting & Architectural Technology	2163	Certificate	928	Lethbridge Community College	4
100. Drama	33	B.A. (Honors)	4 yrs	University of Alberta	-
		B.A. Degree	3 yrs	University of Alberta	3
		B.F.A. Degree	4 yrs	University of Alberta	12(16)
			4 yrs	The University of Calgary	3
		Senior Certificate	90	The Banff School of Fine Arts	7
		Intermediate Certificate	204	The Banff School of Fine Arts	20
		Junior Certificate	204	The Banff School of Fine Arts	43
101. Driller Technician	77	Certificate	300	Petroleum Industry Training Service	135

(16) Number includes graduates in Art.

T A B L E I (continued)

Subject	Code	Program	Instructional Period Provided	Major Educational Institution	Number of Graduates in 1970
E -					
102. Economics	2311	B.A. (Honors)	4 yrs	University of Alberta	2
			4 yrs	The University of Calgary	2
		B.A. Degree	3 yrs	University of Alberta	32
			4 yrs	The University of Calgary	85
			4 yrs	The University of Lethbridge	12
103. Education	27	B.Ed Degree	4 yrs	University of Alberta	1119
			4 yrs	The University of Calgary	472
			4 yrs	The University of Lethbridge	69
		Professional or Graduate Diploma	1 yr[17]	University of Alberta	150
			1 yr[17]	The University of Calgary	76
104. Effective Supervision-Administration	41	Certificate	20	Division of Vocational Education	50
105. Effective Supervision-Communications	41	Certificate	20	Division of Vocational Education	52

[17] Additional to an approved degree.

T A B L E I (continued)

Subject	Code	Program	Instructional Period Provided	Major Educational Institution	Number of Graduates in 1970
106. Effective Supervision in Construction	41	Certificate	20	Division of Vocational Education	183
107. Effective Supervision-Human Relations	41	Certificate	20	Division of Vocational Education	189
108. Effective Supervision in Production	41	Certificate	20	Division of Vocational Education	29
109. Electrical Engineering	2144	B.Sc Degree	4 yrs	University of Alberta	62
			4 yrs	The University of Calgary	14
110. Electrical Mechanic	8739	Certificate of Qualification	4 yrs	Apprenticeship, (S.A.I.T.)	-
111. Electrical Technology	2165	Diploma of Technology	2432-3252[9]	Northern Alberta Institute of Technology	17
			1830-2900[9]	Southern Alberta Institute of Technology	21
112. Electrician	8733	First Class	4 yrs	Apprenticeship, (N.A.I.T.) (S.A.I.T.) (Lethbridge Community College)[18]	299

[18] First and Second year only.

T A B L E I (continued)

Subject	Code	Program	Instructional Period Provided	Major Educational Institution	Number of Graduates in 1970
113. Electronic Technology	2165	Diploma of Technology	2446-3036[9]	Northern Alberta Institute of Technology	65
			2870	Southern Alberta Institute of Technology	48
		Certificate	896	Lethbridge Community College	9
114. Elevator Constructor	8529	Certificate of Proficiency	-[12]	Apprenticeship, Dept. of Labour	-[12]
115. Engineering	2159	Graduate Diploma	1 yr[17]	University of Calgary	-
	2165	Associate Diploma	960	Mount Royal College	4
116. English	2319	B.A. (Honors)	4 yrs	University of Alberta	14
			4 yrs	The University of Calgary	5
		B.A. Degree	3 yrs	University of Alberta	74
			4 yrs	The University of Calgary	72
			4 yrs	The University of Lethbridge	12
117. Entomology	2133	B.Sc (Honors)	4 yrs	University of Alberta	-
		B.Sc Degree	3 yrs	University of Alberta	-
118. Exploration (Mineral-Petroleum) Technology	2165	Diploma of Technology	1992	Northern Alberta Institute of Technology	41

T A B L E I (continued)

Subject	Code	Program	Instructional Period Provided	Major Educational Institution	Number of Graduates in 1970
F -					
119. Farm & Ranch Production Technology	7111	Diploma	1600	Agricultural & Vocational College Olds	36
120. Farm Land Appraisal and Assessment	7199	Certificate	120	Agricultural & Vocational College Olds	-
121. Farm Management Accounting	41	Certificate	20	Division of Vocational Education	-
122. Fashion & Design Merchandising	51	Diploma	1140	Agricultural & Vocational College Olds	20
123. Field Crop Production Technology	2135	Diploma	1800	Agricultural & Vocational College Vermilion	1
			1600	Agricultural & Vocational College Olds	4
124. Fine Art Painting	33	Diploma of Applied Arts	3600	Southern Alberta Institute of Technology	9
125. Fine Art Sculpture	33	Diploma of Applied Arts	3600	Southern Alberta Institute of Technology	1

T A B L E I (continued)

Subject	Code	Program	Instructional Period Provided	Major Educational Institution	Number of Graduates in 1970
126. Finance	41	Diploma	1472	Lethbridge Community College	8
127. Finance & Taxation	41	Certificate	20	Division of Vocational Education	75
128. Firefighting	61	Certificate	120	Division of Vocational Education	24
129. Floorcovering Mechanic	8571	Certificate of Qualification	3 yrs	Apprenticeship, (S.A.I.T.)	-
130. Floorman Technician	77	Certificate	30	Petroleum Industry Training Service	31
131. Food Processing Technology	2139	Diploma of Technology	2040	Northern Alberta Institute of Technology	3
132. Food Science	2131	B.Sc Degree	4 yrs	University of Alberta	1
133. Food Science (Inter-Disciplinary)	2131	B.Sc Degree	4 yrs	University of Alberta	5
134. Food Technology	2135	Diploma	1800	Agricultural & Vocational College Vermilion	-
135. Forest Resource Management	2133	B.Sc Degree	4 yrs	University of Alberta	-
136. Forest Technology	2135	Diploma of Technology	2554	Northern Alberta Institute of Technology	28

T A B L E I (continued)

Subject	Code	Program	Instructional Period Provided	Major Educational Institution	Number of Graduates in 1970
137. Forestry (Advanced)	75	Certificate	1355	Forest Technology School, Hinton	22
138. Forest Firefighter	75	Certificate	40	Forest Technology School, Hinton	638
139. French	2319	B.A. (Honors)	4 yrs	The University of Calgary	3
		B.A. Degree	4 yrs	The University of Calgary	10
			4 yrs	The University of Lethbridge	2
G -					
140. Gasfitter	8791	First Class Certificate	3 yrs	Apprenticeship, (N.A.I.T.)	19
141. Gas Technology	2165	Diploma of Technology	2100	Northern Alberta Institute of Technology	17
142. General Arts and Science	2399	Associate Diploma	960	Mount Royal College	21
143. General Civil Structures	2165	Diploma of Technology	1956	Northern Alberta Institute of Technology	-
144. General Studies (Multi-Disciplinary)	2319	B.A. Degree	4 yrs	The University of Calgary	-
			4 yrs	The University of Lethbridge	3
145. General Studies (Multi-Disciplinary)	2119	B.Sc Degree	4 yrs	The University of Calgary	1
146. General Studies (Multi-Disciplinary)	7199	Diploma	1800	Agricultural & Vocational College Vermilion	7

T A B L E I (continued)

Subject	Code	Program	Instructional Period Provided	Major Educational Institution	Number of Graduates in 1970
147. Genetics	2133	B.Sc (Honors)	4 yrs	University of Alberta	3
		B.Sc Degree	3 yrs	University of Alberta	11
148. Geography	2319	B.A. (Honors)	4 yrs	University of Alberta	3
			4 yrs	The University of Calgary	1
		B.A. Degree	3 yrs	University of Alberta	16
			4 yrs	The University of Calgary	13
			4 yrs	The University of Lethbridge	2
		B.Sc (Honors)	4 yrs	University of Alberta	2
			4 yrs	The University of Calgary	-
		B.Sc Degree	3 yrs	University of Alberta	2
			4 yrs	The University of Calgary	5
149. Geology	2112	B.Sc (Honors)	4 yrs	University of Alberta	5
			4 yrs	The University of Calgary	2
		B.Sc Degree	3 yrs	University of Alberta	11
			4 yrs	The University of Calgary	22
150. Geology-Zoology	2112	B.Sc (Honors)	4 yrs	The University of Calgary	-

T A B L E I (continued)

Subject	Code	Program	Instructional Period Provided	Major Educational Institution	Number of Graduates in 1970
151. Geophysics	2113	B.Sc (Honors)	4 yrs	University of Alberta	-
			4 yrs	The University of Calgary	-
		B.Sc Degree	4 yrs	The University of Calgary	-
152. German	2319	B.A. (Honors)	4 yrs	University of Alberta	1
			4 yrs	The University of Calgary	-
		B.A. Degree	3 yrs	University of Alberta	1
			4 yrs	The University of Calgary	3
153. Glassworker	8795	Certificate of Qualification	4 yrs	Apprenticeship, (S.A.I.T.)	9
154. Graphic Arts Administration	33	Diploma of Applied Arts	1825	Southern Alberta Institute of Technology	1
155. Greek	2319	B.A. (Honors)	4 yrs	The University of Calgary	-
		B.A. Degree	4 yrs	The University of Calgary	-

T A B L E I (continued)

Subject	Code	Program	Instructional Period Provided	Major Educational Institution	Number of Graduates in 1970
H -					
156. Heavy Duty Mechanic	8581	Certificate of Proficiency	4 yrs	Apprenticeship, (N.A.I.T.) (S.A.I.T.) (Agricultural & Vocational College Fairview)(19) (Lethbridge Community College)(19)	168
157. Heavy Duty Equipment Technology	8589	Diploma of Technology	2148	Northern Alberta Institute of Technology	12
158. Heavy Equipment Operating	91	Certificate	450	Alberta Vocational Centre Fort McMurray	42
159. History	2319	B.A. (Honors)	4 yrs	University of Alberta	9
			4 yrs	The University of Calgary	2
		B.A. Degree	3 yrs	University of Alberta	85
			4 yrs	The University of Calgary	63
			4 yrs	The University of Lethbridge	11
160. Hog Production	7187	Certificate	240	Agricultural and Vocational College Vermilion	-

(19) First year only.

T A B L E I (continued)

Subject	Code	Program	Instructional Period Provided	Major Educational Institution	Number of Graduates in 1970
161. Home Economics Demonstrator	61	Diploma	1800	Agricultural & Vocational College Vermilion	-
162. Horse Hoof Care	7199	Certificate	35	Agricultural & Vocational College Vermilion	10
			40	Agricultural & Vocational College Olds	-
163. Horticultural Technology	7195	Diploma	1800	Agricultural & Vocational College Olds	12
164. Hotel, Motel & Restaurant Administration	117	Diploma of Applied Arts	1836	Southern Alberta Institute of Technology	13
165. Household Economics	2319	B.Sc Degree	4 yrs	University of Alberta	101
166. Hunting Guides	73	Certificate	90	Division of Vocational Education	13
167. Industrial Engineering Technology (Manufacturing)	2165	Diploma of Technology	2140	Southern Alberta Institute of Technology	4
168. Industrial Production	2165	Diploma of Technology	2088-3108(9)	Northern Alberta Institute of Technology	16

T A B L E I (continued)

Subject	Code	Program	Instructional Period Provided	Major Educational Institution	Number of Graduates in 1970
169. Industrial Trainers Course	41	Certificate	60	Division of Vocational Education	14
170. Instrument Mechanic	8534	Certificate of Qualification	4 yrs	Apprenticeship, (N.A.I.T.)	-
171. Instrumentation	8539	Diploma of Technology	2412-3050(9)	Northern Alberta Institute of Technology	24
172. Insurance	51	Associate Diploma	960	Mount Royal College	-
173. Interior Design	33	Associate Diploma	1092	Mount Royal College	25
174. Ironworker	8793	Certificate of Completion of Apprenticeship	4 yrs	Apprenticeship, (S.A.I.T.)	15
175. Irrigation	7199	Diploma	1792	Lethbridge Community College	-
J -					
176. Job Instruction Training	41	Certificate	21	Division of Vocational Education	12
177. Job Instruction Training & Human Relations	41	Certificate	18	Division of Vocational Education	10
178. Junior Clerk	41	Certificate	750	Alberta Vocational Centre Fort McMurray	-

T A B L E I (continued)

Subject	Code	Program	Instructional Period Provided	Major Educational Institution	Number of Graduates in 1970
179. Journalism Administration	33	Diploma of Applied Arts	1800	Southern Alberta Institute of Technology	4
180. Journalism	33	Associate Diploma	912	Mount Royal College	3
		Diploma	1056	Lethbridge Community College	6
		Certificate	640	Lethbridge Community College	-
181. Land Classification and Assessment	51	Diploma	1800	Agricultural & Vocational College Vermilion	1
			1600	Agricultural & Vocational College Olds	3
182. Land Resources	7111	Diploma	1800	Agricultural & Vocational College Vermilion	-
183. Lather	8784	Certificate of Qualification	3 yrs	Apprenticeship, (N.A.I.T.)	10
184. Latin	2319	B.A. (Honors)	4 yrs	The University of Calgary	-
		B.A. Degree	4 yrs	The University of Calgary	-
185. Latin or Greek	2319	B.A. (Honors)	4 yrs	University of Alberta	-

T A B L E I (continued)

Subject	Code	Program	Instructional Period Provided	Major Educational Institution	Number of Graduates in 1970
186. Law	2343	L.L.B. Degree	3 yrs[17]	University of Alberta	74
		B.A., L.L.B. Degree	5 yrs	University of Alberta	29
187. Law Enforcement	61	Diploma	1522	Lethbridge Community College	-
188. Library Arts	41	Diploma of Applied Arts	1800	Southern Alberta Institute of Technology	12
189. Library Science	2351	B.L.S. Degree	1 yr[17]	University of Alberta	40
190. Linguistics	2319	B.A. (Honors)	4 yrs	University of Alberta	-
			4 yrs	The University of Calgary	-
		B.A. Degree	4 yrs	The University of Calgary	2
		B.Sc (Honors)	4 yrs	University of Alberta	-
191. Livestock Feeds Technology	7187	Diploma	1800	Agricultural & Vocational College Vermilion	-
			1600	Agricultural & Vocational College Olds	-

T A B L E I (continued)

Subject	Code	Program	Instructional Period Provided	Major Educational Institution	Number of Graduates in 1970
192. Livestock Production Technology	7187	Diploma	1800	Agricultural & Vocational College Fairview	10
			1800	Agricultural & Vocational College Vermilion	16
			1600	Agricultural & Vocational College Olds	26
193. Lookout Man	75	Certificate	40	Forest Technology School, Hinton	32
M -					
194. Machinist	83	Certificate of Qualification	4 yrs	Apprenticeship, (N.A.I.T.) (S.A.I.T.)	57
195. Management Accounting	41	Certificate	16	Division of Vocational Education	93
196. Marketing (Business Administration)	117	Diploma	1472	Lethbridge Community College	6
197. Marketing for the Hospitality Industry	41	Certificate	20	Division of Vocational Education	15
198. Material Technology	2165	Diploma of Technology	2018	Northern Alberta Institute of Technology	7

T A B L E I (continued)

Subject	Code	Program	Instructional Period Provided	Major Educational Institution	Number of Graduates in 1970
199. Mathematics	2181	B.Sc (Honors)	4 yrs	University of Alberta	3
			4 yrs	The University of Calgary	4
		B.Sc Degree	3 yrs	University of Alberta	22
			4 yrs	The University of Calgary	33
		B.A. (Honors)	4 yrs	University of Alberta	1
		B.A. Degree	3 yrs	University of Alberta	5
			4 yrs	The University of Calgary	1
			4 yrs	The University of Lethbridge	5
200. Mathematical Statistics	2181	B.Sc (Honors)	4 yrs	University of Alberta	-
201. Meat Cutting/ Butchering	61	Certificate	710	Northern Alberta Institute of Technology	24
202. Meat Technology	61	Certificate	1056	Lethbridge Community College	6
203. Mechanical Engineering	2147	B.Sc Degree	4 yrs	University of Alberta	48
			4 yrs	The University of Calgary	25
204. Mechanical Engineering Technology	2165	Diploma of Technology	1800	Southern Alberta Institute of Technology	9

T A B L E I (continued)

Subject	Code	Program	Instructional Period Provided	Major Educational Institution	Number of Graduates in 1970
205. Medical Laboratory Science	3119	B.Sc Degree	4 yrs	University of Alberta	13
206. Medical Laboratory Technology	3155	Diploma of Technology	1165	Northern Alberta Institute of Technology (20)	50
			1200	Southern Alberta Institute of Technology (20)	-
207. Medical Laboratory and X-Ray Combined (Basic Clinical)	3155	Certificate	1068	Lab & X-Ray School, Dept. of Health	14
208. Medical Records Librarian	41	Diploma of Applied Arts	1862	Northern Alberta Institute of Technology	23
209. Medical Records	41	Certificate	900	Southern Alberta Institute of Technology	24
210. Medical X-Ray Technology	3155	Diploma of Technology	506	Northern Alberta Institute of Technology (21)	42

(20) In conjunction with affiliated training hospitals and the C.S.L.T. (See Table X)

(21) In conjunction with affiliated training hospitals and the C.S.R.T. (See Table XI)

T A B L E I (continued)

Subject	Code	Program	Instructional Period Provided	Major Educational Institution	Number of Graduates in 1970
211. Medicine	3111	M.D.	4 yrs[22]	University of Alberta	96
			3 yrs[23]	The University of Calgary	-
		B.Sc Degree	1 yr[24]	University of Alberta	8
212. Merchandising Administration	51	Diploma of Applied Arts	1788	Southern Alberta Institute of Technology	18
213. Meteorology	2114	B.Sc Degree	3 yrs	University of Alberta	-
214. Metallurgical Engineering	2151	B.Sc Degree	4 yrs	University of Alberta	8

[22] Additional to a pre-medical program.

[23] Additional to an approved prerequisite degree and post-graduate study.

[24] Following pre-medical study or M.D.

T A B L E I (continued)

Subject	Code	Program	Instructional Period Provided	Major Educational Institution	Number of Graduates in 1970
215. Microbiology	2133	B.Sc (Honors)	4 yrs	University of Alberta	1
			4 yrs	The University of Calgary	1
		B.Sc Degree	3 yrs	University of Alberta	6
			4 yrs	The University of Calgary	6
216. Millwork and Carpentry	8798	Certificate	900	Northern Alberta Institute of Technology	6
217. Millwright	83	Certificate of Qualification	4 yrs	Apprenticeship, (N.A.I.T.) (S.A.I.T.)	15
218. Mining Engineering	2153	B.Sc Degree	4 yrs	University of Alberta	5
219. Motorman Technician	77	Certificate	150	Petroleum Industry Training Service	11
220. Motor Mechanic	8581	Certificate of Proficiency	4 yrs	Apprenticeship, (N.A.I.T.) (S.A.I.T.) (Agricultural & Vocational College Fairview(18) (Lethbridge Community College(18)	323

T A B L E I (continued)

Subject	Code	Program	Instructional Period Provided	Major Educational Institution	Number of Graduates in 1970
221. Music	33	B.A. Degree	3 yrs	University of Alberta	2
			4 yrs	The University of Lethbridge	2
		B.Mus. Degree	4 yrs	University of Alberta	9
			4 yrs	The University of Calgary	8
		Associate Diploma	1632	Mount Royal College	-
N -					
222. Nursing Aides (Certified)	3135	Certificate	1370	Nursing Aide Schools, Dept. of Health	449[25]
223. Nursing	3130	B.Sc Degree	4 yrs	University of Alberta	184
	3130	B.N. Degree	4 yrs	The University of Calgary	-
	3131	Diploma	3 yrs	Archer Memorial Hospital School of Nursing	13
			3 yrs	Royal Alexandra Hospital School of Nursing	126
			3 yrs	Misericordia Hospital School of Nursing	40
			2-3 yrs	Edmonton General (College St. Jean) School of Nursing	75
			3 yrs	University of Alberta Hospital School of Nursing	113

[25] See also Table IX.

T A B L E I (continued)

Subject	Code	Program	Instructional Period Provided	Major Educational Institution	Number of Graduates in 1970
Nursing (continued)			3 yrs	Foothills Hospital School of Nursing	93
			3 yrs	Calgary General Hospital School of Nursing	73
			3 yrs	Holy Cross Hospital School of Nursing	44
			3 yrs	St. Michael's Hospital School of Nursing	36
			3 yrs	Galt Hospital School of Nursing	28
			3 yrs	Medicine Hat Hospital School of Nursing	17
	3131	Diploma	2412	Red Deer College	29
			2320	Mount Royal College	37
			1748	Lethbridge Community College	-
224. Nursing, General and Psychiatric	3131	Diploma	4 yrs	Alberta Hospital, Ponoka	10
225. Nursing Orderlies	3135	Certificate	1045	Alberta Vocational Centre Edmonton	67
			1400	Division of Vocational Education	22
226. Nursing, Post Basic	3130	B.Sc Degree	2 yrs[26]	University of Alberta	-

[26] Additional to R.N. Program.

T A B L E I (continued)

Subject	Code	Program	Instructional Period Provided	Major Educational Institution	Number of Graduates in 1970
227. Nursing, Practical Obstetrics	3130	Certificate	5 mos.[26]	University of Alberta	-
228. Nursing, Psychiatric	3131	Diploma	3 yrs	Alberta Hospital, Ponoka	21
			3 yrs	Alberta Hospital, Oliver	22
229. Nursing, Public Health	3130	Diploma	-[4]	University of Alberta	20
230. Nursing, Teaching and Supervision	3130	Diploma	-[4]	University of Alberta	11
O -					
231. Occupational Therapy	3137	B.O.T. Degree	4 yrs	University of Alberta	1
		Diploma	3 yrs	University of Alberta	14
		Teaching Diploma	2 yrs[27]	University of Alberta	-
232. Office Administration	117	Diploma	1456	Lethbridge Community College	11

[27] Additional to B.O.T. Degree and experience.

T A B L E I (continued)

Subject	Code	Program	Instructional Period Provided	Major Educational Institution	Number of Graduates in 1970
233. Office Machines Technology	8585	Certificate	1020	Northern Alberta Institute of Technology	5
234. Outdoor Recreation	37	Diploma	1750	Lethbridge Community College	13
P -					
235. Painter & Decorator	8785	Certificate of Qualification	4 yrs	Apprenticeship, (N.A.I.T.)	13
236. Painting	33	Senior Certificate	300	The Banff School of Fine Arts	10
		Junior Certificate	300	The Banff School of Fine Arts	4
237. Partsman	8599	Certificate of Qualification	3 yrs	Apprenticeship, (N.A.I.T.) (S.A.I.T.)	30
238. Personnel	41	Certificate	20	Division of Vocational Education	65
239. Petroleum Engineering	2154	B.Sc Degree	4 yrs	University of Alberta	-
240. Petroleum Industry Short Courses	77	Certificate	30-200	Petroleum Industry Training Service	-(15)
241. Petroleum Land Management	41	Associate Diploma	960	Mount Royal College	2
242. Petroleum Practices	77	Certificate	120	Petroleum Industry Training Service	17

T A B L E I (continued)

Subject	Code	Program	Instructional Period Provided	Major Educational Institution	Number of Graduates in 1970
243. Petroleum (Geology-Reservoir) Technology	2165	Diploma of Technology	1890	Southern Alberta Institute of Technology	45
244. Pesticide Application	7198	Certificate	40	Agricultural & Vocational College Olds	-
245. Pharmacology	3151	B.Sc (Honors)	4 yrs	University of Alberta	-
246. Pharmacy	3151	B.Sc Degree	4 yrs	University of Alberta	59
247. Philosophy	2313	B.A. (Honors)	4 yrs	University of Alberta	1
			4 yrs	The University of Calgary	4
		B.A. Degree	3 yrs	University of Alberta	9
			4 yrs	The University of Calgary	4
			4 yrs	The University of Lethbridge	-
248. Photography	33	Diploma of Technology	2160	Northern Alberta Institute of Technology	12

T A B L E I (continued)

Subject	Code	Program	Instructional Period Provided	Major Educational Institution	Number of Graduates in 1970
249. Physical Education	3710	B.P.E. (Honors)	4 yrs	The University of Calgary	-
		B.P.E. Degree	4 yrs	University of Alberta	33
			4 yrs	The University of Calgary	63
		B.A. Degree	4 yrs	The University of Lethbridge	5
		Associate Diploma	960	Mount Royal College	17
250. Physical Therapy	3119	B.P.T. Degree	4 yrs	University of Alberta	-
		Diploma	3 yrs	University of Alberta	29
251. Physics	2113	B.Sc (Honors)	4 yrs	University of Alberta	7
			4 yrs	The University of Calgary	5
		B.Sc Degree	3 yrs	University of Alberta	16
			4 yrs	The University of Calgary	11
		B.A. Degree	4 yrs	The University of Lethbridge	3
252. Physiology	3119	B.Sc (Honors)	4 yrs	University of Alberta	1
253. Pipeline Electrical Maintenance	77	Certificate	90	Petroleum Industry Training Service	30
254. Pipe Trades	8798	Certificate	750	Alberta Vocational Centre Fort McMurray	11

T A B L E I (continued)

Subject	Code	Program	Instructional Period Provided	Major Educational Institution	Number of Graduates in 1970
255. Plant Science	2133	B.Sc Degree	4 yrs	University of Alberta	6
256. Plasterer	8784	Certificate of Qualification	3 yrs	Apprenticeship, (N.A.I.T.)	5
257. Plastics Technology	81	Diploma of Technology	2037	Northern Alberta Institute of Technology	5
258. Plumber	8791	Certificate of Proficiency	4 yrs	Apprenticeship, (N.A.I.T.) (S.A.I.T.)	152
259. Police Science	61	Associate Diploma	960	Mount Royal College	-
260. Political Science	2313	B.A. (Honors)	4 yrs	University of Alberta	9
			4 yrs	The University of Calgary	4
		B.A. Degree	3 yrs	University of Alberta	51
			4 yrs	The University of Calgary	31
			4 yrs	The University of Lethbridge	4
261. Pottery and Ceramics	33	Diploma of Applied Arts	3600	Southern Alberta Institute of Technology	4
262. Poultry Science	2131	B.Sc Degree	4 yrs	University of Alberta	-

T A B L E I (continued)

Subject	Code	Program	Instructional Period Provided	Major Educational Institution	Number of Graduates in 1970
263. Power Electrician	8731	Certificate of Qualification	4 yrs	Apprenticeship, (N.A.I.T.)	30
264. Power Engineering	95	First Class Engineer	-	Boilers Branch, Dept. of Labour	-(12)
		Second Class Engineer	-	Boilers Branch, Dept. of Labour	-(12)
		Third Class Engineer	-	Boilers Branch, Dept. of Labour	-(12)
		Fourth Class Engineer	-	Boilers Branch, Dept. of Labour	-(12)
		Fireman's	-	Boilers Branch, Dept. of Labour	-(12)
		Special Oilwell	-	Boilers Branch, Dept. of Labour	-(12)
265. Power Engineering Technology	95	Diploma of Technology	1950	Southern Alberta Institute of Technology	15
266. Pre-Employment Carpentry	8798	Certificate	480	Division of Vocational Education	16
267. Psychology	2315	B.A. (Honors)	4 yrs	University of Alberta	9
			4 yrs	The University of Calgary	-
		B.A. Degree	3 yrs	University of Alberta	85
			4 yrs	The University of Calgary	62
			4 yrs	The University of Lethbridge	12

TABLE I (continued)

Subject	Code	Program	Instructional Period Provided	Major Educational Institution	Number of Graduates in 1970
Psychology (continued)		B.Sc (Honors)	4 yrs	University of Alberta	2
			4 yrs	The University of Calgary	-
		B.Sc Degree	3 yrs	University of Alberta	6
			4 yrs	The University of Calgary	11
268. Psychobiology	2133	B.A. Degree	4 yrs	The University of Lethbridge	3
269. Public Administration	117	Associate Diploma	1008	Mount Royal College	-
270. Public Relations	117	Associate Diploma	960	Mount Royal College	-
271. Pure Mathematics	2181	B.A. (Honors)	4 yrs	The University of Calgary	-
		B.A. Degree	4 yrs	The University of Calgary	-
		B.Sc (Honors)	4 yrs	The University of Calgary	-
		B.Sc Degree	4 yrs	The University of Calgary	1
R -					
272. Radio Technician	8537	Certificate of Proficiency	4 yrs	Apprenticeship, (N.A.I.T.) (S.A.I.T.)	30
273. Radio - T.V. Arts	33	Diploma of Technology	1712	Northern Alberta Institute of Technology	13

T A B L E I (continued)

Subject	Code	Program	Instructional Period Provided	Major Educational Institution	Number of Graduates in 1970
274. Radio - T.V. Broadcasting	33	Diploma	1232	Lethbridge Community College	-
		Certificate	656	Lethbridge Community College	-
275. Radio and Television Servicing	8539	Certificate	940	Northern Alberta Institute of Technology	14
276. Real Estate	51	Associate Diploma	960	Mount Royal College	-
		Certificate	480	Mount Royal College	-
277. Recreational Administration	3710	B.A. Degree	4 yrs	University of Alberta	19
278. Recreation and Outdoor Education	3710	Associate Diploma	1056	Mount Royal College	24
279. Recreation Facility Maintenance	3719	Certificate	876	Southern Alberta Institute of Technology	-
280. Refrigeration Mechanic	8599	Certificate of Proficiency	4 yrs	Apprenticeship, (S.A.I.T.)	14
281. Religion	25	Associate Diploma	960	Mount Royal College	7
282. Religious Studies	25	B.A. Degree	3 yrs	University of Alberta	2
283. Residential Child Care	61	Certificate	528	Mount Royal College	24

T A B L E I (continued)

Subject	Code	Program	Instructional Period Provided	Major Educational Institution	Number of Graduates in 1970
284. Respiratory Technology	3155	Diploma of Technology	984	Northern Alberta Institute of Technology[28]	36
			906	Southern Alberta Institute of Technology[28]	-
285. Retail Management	41	Certificate	20	Division of Vocational Education	30
286. Retail Selling	51	Certificate	20	Division of Vocational Education	193
287. Romance Languages	2319	B.A. (Honors)	4 yrs	University of Alberta	1
		B.A. Degree	3 yrs	University of Alberta	30
288. Roofer	8787	Certificate of Completion of Apprenticeship	3 yrs	Apprenticeship, (N.A.I.T.)	17
289. Roughneck (Pre-employment)	77	Certificate	140	Alberta Vocational Centre Edmonton	-[15]
290. Russian	2319	B.A. (Honors)	4 yrs	The University of Calgary	1
		B.A. Degree	4 yrs	The University of Calgary	1

[28] In conjunction with affiliated training hospitals and the C.S.I.T.T.

T A B L E I (continued)

Subject	Code	Program	Instructional Period Provided	Major Educational Institution	Number of Graduates in 1970
S -					
291. Scandinavian	2319	B.A. Degree	3 yrs	University of Alberta	-
292. Science (general & Pre-discipline)	2119	B.Sc Degree	2-3 yrs	University of Alberta	80
293. Secretarial Science	41	Diploma	1552	Grande Prairie Regional College	-
			1759	Northern Alberta Institute of Technology	18
			2910	Red Deer College	-
			1008	Mount Royal College	1
			2004	Southern Alberta Institute of Technology	10
		Certificate[29]	1560	Medicine Hat College	1
			1500	Agricultural & Vocational College Fairview	5
			752	Grande Prairie Regional College	28
			1800	Agricultural & Vocational College Vermilion	11
			1680	Red Deer College	11

[29] A diploma may be issued for high attainment at Agricultural and Vocational Colleges.

T A B L E I (continued)

	Subject	Code	Program	Instructional Period Provided	Major Educational Institution	Number of Graduates in 1970
	Secretarial Science (continued)			1100	Agricultural & Vocational College Olds	21
				780	Medicine Hat College	9
				784	Lethbridge Community College	40
294.	Sheet Metal Mechanic	8526	Certificate of Proficiency	4 yrs	Apprenticeship, (N.A.I.T.) (S.A.I.T.)	109
295.	Short Order and Specialty Cooking	61	Certificate	1050	Southern Alberta Institute of Technology	14
296.	Slavic Languages	2319	B.A. (Honors)	4 yrs	University of Alberta	2
			B.A. Degree	3 yrs	University of Alberta	8
297.	Social Services	2339	Diploma	2344	Northern Alberta Institute of Technology	32
				3528	Red Deer College	-
298.	Social Work Careers	2339	Associate Diploma	1056	Mount Royal College	8

T A B L E I (continued)

Subject	Code	Program	Instructional Period Provided	Major Educational Institution	Number of Graduates in 1970
299. Sociology	2313	B.A. (Honors)	4 yrs	University of Alberta	3
			4 yrs	The University of Calgary	-
		B.A. Degree	3 yrs	University of Alberta	157
			4 yrs	The University of Calgary	60
			4 yrs	The University of Lethbridge	14
300. Soils & Fertilizers Technology	7111	Diploma	1800	Agricultural & Vocational College Vermilion	7
			1600	Agricultural & Vocational College Olds	3
301. Soil Science	2131	B.Sc Degree	4 yrs	University of Alberta	10
302. Soil and Water Technology	7111	Diploma	1600	Agricultural & Vocational College Olds	3
303. Spanish	2319	B.A. (Honors)	4 yrs	The University of Calgary	-
		B.A. Degree	4 yrs	The University of Calgary	1
304. Speech Pathology and Audiology	3119	B.Sc Degree	4 yrs	University of Alberta	-
305. Statistics	2181	B.Sc Degree	4 yrs	The University of Calgary	-

T A B L E I (continued)

Subject	Code	Program	Instructional Period Provided	Major Educational Institution	Number of Graduates in 1970
306. Steamfitter	8791	Certificate of Proficiency	4 yrs	Apprenticeship, (N.A.I.T.) (S.A.I.T.)(18)	41
307. Stenography	41	Certificate	1500	Alberta Vocational Centre Fort McMurray	-
			1500	Agricultural & Vocational College Fairview	5
			1200	Alberta Vocational Centre Edmonton	48
			1020	Alberta Vocational Centre Calgary	33
			528	Mount Royal College	15
308. Structural Technology	2165	Diploma of Technology	1800	Southern Alberta Institute of Technology	10
309. Surveying	2165	Diploma of Technology	1992	Northern Alberta Institute of Technology	8
			1820	Southern Alberta Institute of Technology	7
	8799	Certificate	120	Agricultural & Vocational College Olds	-
			688	Lethbridge Community College	-

T A B L E I (continued)

Subject	Code	Program	Instructional Period Provided	Major Educational Institution	Number of Graduates in 1970
T -					
310. Telecommunications	95	Diploma of Technology	2392-3168[9]	Northern Alberta Institute of Technology	32
311. Television, Stage and Radio Arts	33	Diploma of Applied Arts	1800	Southern Alberta Institute of Technology	2
312. Textiles and Design	61	Diploma	1800	Agricultural & Vocational College Vermilion	-
313. Theatre Arts	33	Diploma	1344	Lethbridge Community College	-
		Certificate	576	Lethbridge Community College	-
314. Theatre Crafts	33	Senior Diploma	400[30]	The Banff School of Fine Arts	-
		Junior Diploma	1600	The Banff School of Fine Arts	-
315. Tile Setter	8782	Certificate of Qualification	4 yrs	Apprenticeship, (N.A.I.T.)	5

[30] Additional to a Junior Diploma.

T A B L E I (continued)

Subject	Code	Program	Instructional Period Provided	Major Educational Institution	Number of Graduates in 1970
U -					
316. Urban and Regional Planning	2165	Associate Diploma	960	Mount Royal College	-
V -					
317. Vocational Agriculture	7111	Diploma	1428	Lethbridge Community College	2
W -					
318. Welder	83	First Class Certificate	3 yrs	Apprenticeship, (N.A.I.T.) (S.A.I.T.) (Lethbridge Community College)	220
319. Welders	83	Grade 'B' Pressure Cert.	-	Boilers Branch, Dept. of Labour	-(12)
320. Welding (Arc & Gas)	83	Certificate	120-750(31)	Alberta Vocational Centre Fort McMurray	48
			120	Division of Vocational Education	4
			90	Southern Alberta Institute of Technology	-(15)
			192	Lethbridge Community College	-(15)

(31) Elementary and regular.

T A B L E I (continued)

Subject	Code	Program	Instructional Period Provided	Major Educational Institution	Number of Graduates in 1970
Z -					
321. Zoology	2133	B.Sc (Honors)	4 yrs	University of Alberta	14
			4 yrs	The University of Calgary	3
		B.Sc Degree	3 yrs	University of Alberta	51
			4 yrs	The University of Calgary	54
TOTAL					13,768

T A B L E XIV

GRADUATION DISTRIBUTION BY MAJOR, MINOR OR UNIT GROUP OF OCCUPATIONAL CLASSIFICATION[1] - 1970

Minor Code	Unit Code	Major, Minor and Unit Groups	Number of Graduates	Percent of Total
MANAGERIAL, ADMINISTRATIVE AND RELATED OCCUPATIONS				
111		Officials and Administrators Unique to Government	-	-
113/114		Other Managers and Administrators	223	1.62
117		Occupations Related to Management and Administration	257	1.87
OCCUPATIONS IN NATURAL SCIENCES, ENGINEERING AND MATHEMATICS				
211		Physical Sciences		
	2111	Chemists	104	.76
	2112	Geologists	40	.29
	2113	Physicists	42	.30
	2114	Meteorologists	-	-
	2117	Physical Sciences Technologists and Technicians	-	-
	2119	Occupations in Physical Sciences, n.e.c.	86	.62
213		Life Sciences		
	2131	Agriculturists and Related Scientists	80	.58
	2133	Biologists and Related Scientists	208	1.51
	2135	Life Sciences Technologists and Technicians	64	.46
	2139	Occupations in Life Sciences, n.e.c.	3	.02
214/215		Architects and Engineers		
	2141	Architects	-	-
	2142	Chemical Engineers	60	.44
	2143	Civil Engineers	66	.48
	2144	Electrical Engineers	76	.55
	2145	Industrial Engineers	-	-
	2147	Mechanical Engineers	73	.53
	2151	Metallurgical Engineers	8	.06
	2153	Mining Engineers	5	.04
	2154	Petroleum Engineers	-	-
	2155	Aeronautical Engineers	-	-
	2157	Nuclear Engineers	-	-
	2159	Architects and Engineers, n.e.c.	-	-

[1] From Canadian Classification and Dictionary of Occupations. Does not include post-graduate completions. See page 31.

T A B L E XIV (continued)

Minor Code	Unit Code	Major, Minor and Unit Groups	Number of Graduates	Percent of Total
216		Other Occupations in Architecture and Engineering		
	2160	Supervisors, Other Occupations in Architecture and Engineering	-	-
	2161	Surveyors	-	-
	2163	Draughtsmen	35	.25
	2165	Architectural and Engineering Technologists and Technicians	485	3.52
218		Occupations in Mathematics, Statistics, Systems Analysis and Related Fields		
	2181	Mathematics, Statisticians and Actuaries	76	.55
	2183	Systems Analysts, Computer Programmers and Related Occupations	46	.33
	2189	Occupations in Mathematics, Statistics, Systems Analysis and Related Fields, n.e.c.	45	.33
OCCUPATIONS IN SOCIAL SCIENCES AND RELATED FIELDS				
231		Occupations in Social Sciences		
	2311	Economists	133	.97
	2313	Sociologists, Anthropologists and Related Social Scientists	377	2.74
	2315	Psychologists	187	1.36
	2319	Occupations in Social Sciences n.e.c.	570	4.14
233		Occupations in Social Work and Related Fields		
	2331	Social Workers	-	-
	2333	Occupations in Welfare and Community Services	-	-
	2339	Occupations in Social Work and Related Fields	162	1.18
234		Occupations in Law and Jurisprudence		
	2341	Judges and Magistrates	-	-
	2343	Lawyers and Notaries	103	.75
	2349	Occupations in Law and Jurisprudence, n.e.c.	-	-

T A B L E XIV (continued)

Minor Code	Unit Code	Major, Minor and Unit Groups	Number of Graduates	Percent of Total
235		Occupations in Library, Museum and Archival Sciences		
	2350	Supervisors: Occupations in Library, Museum and Archival Sciences	-	-
	2351	Librarians and Archivists	40	.29
	2353	Technicians in Library, Museum and Archival Sciences	-	-
	2359	Occupations in Library, Museum and Archival Sciences, n.e.c.	-	-
239		Other Occupations in Social Sciences and Related Fields		
	2391	Educational and Vocational Counsellors	-	-
	2399	Other Occupations in Social Sciences and Related Fields, n.e.c.	21	.15
OCCUPATIONS IN RELIGION				
251		Occupations in Religion	9	.06
TEACHING AND RELATED OCCUPATIONS			1886	13.70
271		University Teaching and Related Occupations		
273		Elementary and Secondary School Teaching and Related Occupations		
279		Other Teaching and Related Occupations		
OCCUPATIONS IN MEDICINE AND HEALTH				
311		Health Diagnosing and Treating Occupations		
	3111	Physicians and Surgeons	104	.76
	3113	Dentists	42	.31
	3115	Veterinarians	-	-
	3117	Osteopaths and Chiropractors	-	-
	3119	Health Daignosing and Treating Occupations, n.e.c.	43	.31
313		Nursing Therapy and Related Occupations		
	3130	Supervisors: Nursing Therapy and Related Assisting Occupations	215	1.56
	3131	Nurses, Graduate	777	5.64
	3133	Nurses-in-Training in Hospitals	-	-
	3135	Nursing Assistants, Nursing Aides and Orderlies	538	3.91
	3137	Physical and Occupational Therapists	15	.11
	3139	Nursing, Therapy and Related Assisting Occupations, n.e.c.	-	-

T A B L E XIV (continued)

Minor Code	Unit Code	Major, Minor and Unit Groups	Number of Graduates	Percent of Total
315		Other Occupations in Medicine and Health		
	3151	Pharmacists	59	.43
	3152	Dietitians and Nutritionists	-	-
	3153	Optometrists	-	-
	3154	Dispensing Opticians	-	-
	3155	Medical Technologists and Technicians	142	1.03
	3157	Dental Hygienists, Assistants and Technicians	74	.54
	3159	Other Occupations in Medicine and Health, n.e.c.	35	.25
ARTISTIC, LITERARY, PERFORMING ARTS AND RELATED OCCUPATIONS			266	1.93
331		Occupations in Fine and Commercial Art, Photography and Related Fields		
333		Occupations in Performing and Audio-Visual Arts		
335		Occupations in Writing		
OCCUPATIONS IN SPORT AND RECREATION			174	1.26
371		Occupations in Sport and Recreation		
CLERICAL AND RELATED OCCUPATIONS			1864	13.54
411		Stenographic and Typing Occupations		
413		Bookkeeping and Account-Recording Occupations		
414		Office Machine and Electronic Data- Processing Equipment Operators		
415		Material Recording, Scheduling and Distributing Occupations		
416		Library, Filing and Correspondence Clerks and Related Occupations		
417		Reception, Information, Mail and Message Distribution Occupations		
419		Other Clerical and Related Occupations		

T A B L E XIV (continued

Minor Code	Unit Code	Major, Minor and Unit Groups	Number of Graduates	Percent of Total
SALES OCCUPATIONS			237	1.72
513/514		Sales Occupations, Commodities		
517		Sales Occupations, Services		
519		Other Sales Occupations		
SERVICE OCCUPATIONS			180	1.31
611		Protective Service Occupations		
612		Food and Beverage Preparation and Related Service Occupations		
613		Lodging and Related Service Occupations		
614/615		Personal Service Occupations		
616		Apparel and Furnishings Service Occupations		
617		Building and Related Service Occupations		
619		Other Service Occupations		
FARMING, HORTICULTURAL AND ANIMAL HUSBANDRY OCCUPATIONS				
711		Farmers		
	7111	General Farmers	81	.59
	7113	Animal Farmers	1	.00
	7115	Crop Farmers	-	-
713		Farm Managers		
	7131	Farm Managers	-	-
718/719		Other Farming, Horticultural and Animal Husbandry Occupations		
	7180	Foremen: Other Farming, Horticultural and Animal Husbandry Occupations	-	-
	7181	General Workers, Farm	-	-
	7183	Field Crop and Vegetable Growing Workers	-	-
	7185	Orchards, Vineyard and Related Tree and Shrub Crop Workers	-	-
	7187	Livestock Workers	52	.38
	7191	Dairy Farm Workers	8	.06
	7193	Poultry Farm Workers	-	-
	7195	Nursery and Related Workers	12	.09
	7197	Farm Machinery Operators and Custom Operators	-	-

TABLE XIV (continued)

Minor Code	Unit Code	Major, Minor and Unit Groups	Number of Graduates	Percent of Total
	7198	Occupations in Labouring and Other Elemental Work: Farming, Horticulture and Animal Husbandry	-	-
	7199	Other Farming, Horticultural and Animal Husbandry Occupations, n.e.c.	44	.32
FISHING, HUNTING AND RELATED OCCUPATIONS			13	.09
731		Fishing, Hunting and Related Occupations		
FORESTRY AND LOGGING OCCUPATIONS			692	5.03
751		Forestry and Logging Occupations		
MINING AND QUARRYING INCLUDING OIL AND GAS FIELD OCCUPATIONS			256	1.86
771		Mining and Quarrying Including Oil and Gas Field Occupations		
PROCESSING OCCUPATIONS			5	.04
811		Mineral Ore Treating Occupations		
813/814		Metal Processing and Related Occupations		
815		Clay, Glass and Stone Processing, Forming and Related Occupations		
816/817		Chemicals, Petroleum, Rubber, Plastics and Related Materials Processing Occupations		
821/822		Food, Beverage and Related Processing Occupations		
823		Wood Processing Occupations, Except Pulp and Papermaking		
825		Pulp and Papermaking and Related Occupations		
826/827		Textile Processing Occupations		
829		Other Processing Occupations		

T A B L E XIV (continued)

Minor Code	Unit Code	Major, Minor and Unit Groups	Number of Graduates	Percent of Total
MACHINING AND RELATED OCCUPATIONS			344	2.50
831		Metal Machining Occupations		
833		Metal Shaping and Forming Occupations, Except Machining		
835		Wood Machining Occupations		
837		Clay, Glass and Stone and Related Materials Machining Occupations		
839		Other Machining and Related Occupations		
PRODUCT FABRICATING, ASSEMBLING AND REPAIRING OCCUPATIONS				
851/852		Fabricating, and Assembling Occupations, Metal Products, n.e.c.	109	.79
853		Fabricating, Assembling, Installing and Repairing Occupations: Electrical, Electronic and Related Equipment	210	1.53
854		Fabricating, Assembling and Repairing Occupations: Wood Products	-	-
855/856		Fabricating, Assembling and Repairing Occupations: Textile, Fur and Leather Products	-	-
857		Fabricating, Assembling and Repairing Occupations: Rubber and Plastic Products	-	-
858		Mechanics and Repairmen Except Electrical	670	4.87
859		Other Products Fabricating, Assembling and Repairing Occupations	44	.32
CONSTRUCTION TRADES OCCUPATIONS				
871		Excavating, Grading, Paving and Related Occupations	-	-
873		Electrical Power, Lighting and Wire Communications, Erecting, Installing and Repairing Occupations.		
	8730	Foremen: Electrical Power, Lighting and Wire Communications Erecting, Installing and Repairing Occupations	-	-
	8731	Electrical Power Linemen and Related Occupations	30	.22

T A B L E XIV (continued)

Minor Code	Unit Code	Major, Minor and Unit Groups	Number of Graduates	Percent of Total
	8733	Construction Electricians and Repairmen	299	2.17
	8735	Wire Communication Lines Installing and Repairing Occupations	-	-
	8736	Inspecting, Testing, Grading, and Sampling Occupations: Electrical Power, Lighting and Wire Communications Erecting, Installing and Repairing	-	-
	8738	Occupations in Labouring and Other Elemental Work: Electrical Power, Lighting and Wire Communications Erecting, Installing and Repairing	-	-
	8739	Electrical Power, Lighting and Wire Communications Erecting, Installing and Repairing Occupations, n.e.c.	-	-
878/879		Other Construction Trades Occupations		
	8780	Foremen, Other Construction Trades Occupations	11	.08
	8781	Carpenters and Related Occupations	91	.66
	8782	Brick and Stone Masons and Tile Setters	21	.15
	8783	Concrete Finishing and Related Occupations	-	-
	8784	Plasterers and Related Occupations	15	.11
	8785	Painters, Paperhangers and Related Occupations	13	.10
	8786	Insulating Occupations, Construction	-	-
	8787	Roofing, Waterproofing and Related Occupations	17	.12
	8791	Plumbers, Gas Fitters, Steam Fitters and Related Occupations	212	1.54
	8793	Structural Metal Erectors	15	.11
	8795	Glaziers	9	.06
	8796	Inspecting, Testing, Grading and Sampling Occupations, Construction Except Electrical	-	-

T A B L E XIV (continued)

Minor Code	Unit Code	Major, Minor and Unit Groups	Number of Graduates	Percent of Total
	8798	Occupations in Labouring and Other Elemental Work, Other Construction Trades	53	.38
	8799	Other Construction Trades Occupations, n.e.c.	-	-
TRANSPORT EQUIPMENT OPERATING OCCUPATIONS			59	.43
911		Air Transport Operating Occupations		
913		Railway Transport Operating Occupations		
915		Water Transport Operating Occupations		
917		Motor Transport Operating Occupations		
919		Other Transport Equipment Operating Occupations		
MATERIALS HANDLING AND RELATED OCCUPATIONS, N.E.C.			-	-
931		Materials Handling and Related Occupations, n.e.c.		
OTHER CRAFTS AND EQUIPMENT OPERATING OCCUPATIONS			47	.34
951		Printing, Bookbinding and Related Occupations		
953		Stationary Engine and Utilities Equipment Operating Occupations		
955		Electronic and Related Communications Equipment Operating Occupations, n.e.c.		
959		Other Crafts and Equipment Operating Occupations, n.e.c.		
OCCUPATIONS NOT ELSEWHERE CLASSIFIED			-	-
991		Occupations Not Elsewhere Classified		
Totals			13,768	100.0

T A B L E XVIII

SUBJECTS OF STUDY AVAILABLE AT
THE UNIVERSITY OF ALBERTA
BY PROGRAM OFFERINGS - 1970

Program	Subject	Number of Courses Required			Total Program Years
		Prescribed	Optional	Total	
B.A. Honors					
	Anthropology			*	4
	Art	14	7	21	4
	Classics	10	10	20	4
	Classics, Ancient History & Classical Archaeology	12	8	20	4
	Latin or Greek	12	8	20	4
	Comparative Literature	15	5	20	4
	Drama	12	8	20	4
	Economics	9	12	21	4
	English	14	6	20	4
	German	12	8	20	4
	History	15	7	22	4
	Philosophy	14		*	4
	Political Science			*	4
	Psychology			*	4
	Romance Languages			*	4
	Slavic Languages			*	4
	Sociology			*	4
B.A. Degree					
	Anthropology			*	
	Art			*	3
	Classics			*	3
	Comparative Literature			*	3
	Drama			*	3
	Economics			*	3
	English			*	3
	German			*	3
	Scandinavian			*	3
	History			*	3
	Music			*	3
	Philosophy			*	3
	Political Science			*	3
	Psychology			*	3
	Recreation Administration	8.5	15.5	24	4
	Religious Studies			*	3
	Romance Languages			*	3
	Slavic Languages			*	3
	Sociology			*	3

*Consult with department.

For post-graduate programs see page 31.

T A B L E XVIII (continued)

Program	Subject	Number of Courses Required			Total Program Years
		Prescribed	Optional	Total	
B.Sc Honors					
	Applied Mathematics	9	12	21	4
	Applied Physics	18.5	3.5	22	4
	Biochemistry	17	4	21	4
	Botany	13	7	20	4
	Chemistry	17	4	21	4
	Computing Science	15	6	21	4
	Entomology	18	2	20	4
	Genetics	17	4	21	4
	Geography	11	9	20	4
	Geology	18	3	21	4
	Geophysics	18	4	22	4
	Linguistics	15		*	4
	Mathematics	9	12	21	4
	Mathematical Statistics	9	12	21	4
	Microbiology	16.5	4.5	21	4
	Pharmacology	17	5	22	4
	Physics	19	3	22	4
	Physiology			*	4
	Psychology		5	*	4
	Zoology	16.5	6	22.5	4
B.Sc Degree (Agriculture)					
	Agricultural Economics			*	4
	Agricultural Mechanization	12.5	9	21.5	4
	Animal Science	11.5	11	22.5	4
	Poultry Science	11.5	11	22.5	4
	Entomology	9.5		*	4
	Food Science	10.5		*	4
	Forest Resource Management			*	4
	Inter-Disciplinary Food Science	15.5	4	19.5	4
	Plant Science			*	4
	Soil Science	11		*	4
B.Sc Degree					
	Biochemistry	12	9	21	4
	Biology			*	
	Botany	11	5	16	3
	Chemistry	11	5	16	3
	Computing Science	11	5	16	3
	Entomology	11	5	16	3
	Genetics	11	5	16	3

T A B L E XVIII (continued)

Program	Subject	Number of Courses Required			Total Program Years
		Prescribed	Optional	Total	
B.Sc Degree					
	Geography	11	5	16	3
	Geology	11	5	16	3
	Household Economics	13.5	6.5	20	4
	Linguistics	11	5	16	3
	M.L.S.	15.5	2	17.5	4
	Mathematics	11	5	16	3
	Meteorology	11	5	16	3
	Microbiology	11	5	16	3
B.Sc Degree					
	Nursing, Basic	18.5	4.5	23	4
	Nursing, Post Basic	6	6	12	2
Certificate	Nursing, Obstetrics			3	5 mt.
B.Sc Degree					
	Pharmacy	23	1	24	4
	Physics	11	5	16	3
	Psychology	11	5	16	3
	Speech Pathology & Audiology	23	3	26	4
	Zoology	11	5	16	3
B.Com. Degree					
	Commerce	15.5	5	20.5	4
B.Ed Degree					
	Education			20 *	4
Diploma					
	Education			*	
B.F.A. Degree					
	Art	17	4	21	4
B.F.A. Degree					
	Drama	20	4	24	4
B. Music Degree					
	Music	25.5	4	29.5	4
B.Sc Engineering					
	Chemical	19	5	24	4
	Civil	18	2.5	20.5	4
	Electrical	22.5	3	25.5	4
	Mechanical	19.5	3.5	23	4
	Mining	21	2.5	23.5	4
	Metallurgical	19.5	3.5	23	4
	Petroleum			*	4

T A B L E XVIII (continued)

Program	Subject	Number of Courses Required			Total Program Hours
		Prescribed	Optional	Total	
M.D.					
	Medicine	26		*	4
B.P.E. Degree					
	Physical Education	17	10	27	4
B.O.T. Degree					
	Occupational Therapy	23	3	26	4
Diploma					
	Occupational Therapy	19		19	3
B.L.S. Degree					
	Library Science	8			1
D.D.S. Degree					
	Dentistry	39.5		39.5	4
Diploma					
	Dental Auxilliary	20		20	2
	Dental Hygiene	20		20	2
LL.B. Degree					
	Law			*	3
B.A., LL.B.					
	Law			*	5
B.P.T. Degree					
	Physical Therapy	23	4	27	4
Diploma					
	Physical Therapy	19		19	3

T A B L E XIX

SUBJECTS OF STUDY AVAILABLE AT
THE UNIVERSITY OF CALGARY
BY PROGRAM OFFERINGS - 1970

Program	Subject	Number of Courses Required			Total Program Years
		Prescribed	Optional	Total	
B.A. Honors					
	Anthropology	8	12	20	4
	Applied Mathematics	13	7	20	4
	Archaeology	12	8	20	4
	Classics	9	11	20	4
	Economics	12	8	20	4
	English	10	10	20	4
	French	10	10	20	4
	Geography	9	11	20	4
	German	10	10	20	4
	Greek	10	10	20	4
	History	8	12	20	4
	Latin	10	10	20	4
	Linguistics	8	12	20	4
	Philosophy	8	12	20	4
	Political Science	9	11	20	4
	Psychology	8	12	20	4
	Pure Mathematics	12	8	20	4
	Sociology	8	12	20	4
	Spanish	9	11	20	4
B.A. Degree					
	Anthropology	7	13	20	4
	Applied Mathematics	7	13	20	4
	Archaeology	11	9	20	4
	Classics	7	13	20	4
	Economics	9	11	20	4
	English	7	13	20	4
	French	7	13	20	4
	General Studies	-	20	20	4
	Geography	7	13	20	4
	German	7	13	20	4
	Greek	7	13	20	4
	History	7	13	20	4
	Latin	7	13	20	4
	Linguistics	7	13	20	4
	Philosophy	7	13	20	4
	Political Science	7	13	20	4
	Psychology	7	13	20	4
	Pure Mathematics	7	13	20	4

*Consult with department.

For post-graduate programs see page 31.

T A B L E XIX (continued)

Program	Subject	Number of Courses Required			Total Program Hours
		Prescribed	Optional	Total	
B.A. Degree					
	Russian	7	13	20	4
	Sociology	7	13	20	4
	Spanish	7	13	20	4
B.Sc Honors					
	Applied Mathematics	13	7	20	4
	Biochemistry	10	10	20	4
	Botany	12	8	20	4
	Chemistry	10	10	20	4
	Computing Science	10	10	20	4
	Geography	10	10	20	4
	Geology	10	10	20	4
	Geology-Zoology	15	5	20	4
	Geophysics	11	9	20	4
	Microbiology	12.5	7.5	20	4
	Physics	14	6	20	4
	Psychology	8	12	20	4
	Pure Mathematics	12	8	20	4
	Zoology	11.5	8.5	20	4
B.Sc Degree					
	Applied Mathematics	7	13	20	4
	Biochemistry	9	11	20	4
	Botany	12	8	20	4
	Chemistry	9	11	20	4
	Computing Science	7	13	20	4
	General Studies	-	20	20	4
	Geography	7	13	20	4
	Geology	7	13	20	4
	Geophysics	8.5	11.5	20	4
	Microbiology	12.5	7.5	20	4
	Physics	8.5	11.5	20	4
	Psychology	7	13	20	4
	Pure Mathematics	7	13	20	4
	Statistics	7	13	20	4
	Zoology	11.5	8.5	20	4
B.Comm Degree					
	Business	15	6	21	4
B.Ed Degree					
(Elementary)		14	7	21	4
(Secondary)		14	6	20	4
Diploma in Education		With approval of Department			

T A B L E XIX (continued)

Program Subject	Number of Courses Required			Total Program Hours
	Prescribed	Optional	Total	
B.F.A. Degree (Art)				
Ceramics	11	9	20	4
Graphics	11	9	20	4
Painting	11	9	20	4
Photography	11	9	20	4
Sculpture	11	9	20	4
B.F.A. Degree (Drama)				
Drama	13	7	20	4
B. Music Degree				
Applied Music	15	5	20	4
Music History and Literature	14	6	20	4
School-Instrumental	16	4	20	4
School-Vocal	15	5	20	4
Theory and Composition	15	5	20	4
B.Sc Degree Engineering				
Chemical	21.5	3	24.5	4
Civil	21.5	3	24.5	4
Electrical	21	3	24	4
Mechanical	21.5	3	24.5	4
Diploma in Engineering				
-		4	4	1
M.D.				
Medicine			*	
BN Degree				
Nursing	18.5	2.5	21	4
B.P.E. Honors				
Physical Education	17	6	23	4
B.P.E. (General)				
Physical Education	12.5	5.5	18	4

TABLE XX

SUBJECTS OF STUDY AVAILABLE AT
THE UNIVERSITY OF LETHBRIDGE
BY PROGRAM OFFERINGS - 1970

Program	Subject	Number of Courses Required			Total Program Years
		Prescribed	Optional	Total	
B.A. Degree					
	Anthropology	8	22	30	4
	Art	8	22	30	4
	Biological Sciences	8	22	30	4
	Chemistry	8	22	30	4
	Economics	8	22	30	4
	English	8	22	30	4
	French	8	22	30	4
	Geography	8	22	30	4
	History	8	22	30	4
	Mathematics	8	22	30	4
	Music	8	22	30	4
	Philosophy	8	22	30	4
	Physical Education	8	22	30	4
	Physics	8	22	30	4
	Political Science	8	22	30	4
	Psychology	8	22	30	4
	Sociology	8	22	30	4
	Psychobiology	8	22	30	4
B.Ed Degree					
	Education	21	19	40	4

TABLE XXI

SUBJECTS OF STUDY AVAILABLE THROUGH
THE ALBERTA APPRENTICESHIP BRANCH
DEPARTMENT OF LABOUR - 1970

Program	Subject	Number of Courses Required*			Total Program Years
		Prescribed	Optional	Total	
Certificate					
	Appliance Serviceman	18	-	18	4
	Auto Body Mechanic	13	-	13	4
	Baker	11	-	11	3**
	Barber	-	-	-	-**
	Beautician	-	-	-	-
	Bricklayer	12	-	12	4
	Carpenter	16	-	16	4
	Communications Electrician	14	-	14	4
	Cook	15	-	15	3**
	Dental Mechanic	-	-	-	-
	Electrical Mechanic	10	-	10	4
	Electrician	17	-	17	4**
	Elevator Constructor	-	-	-	-
	Floorcovering Mechanic	11	-	11	3
	Gasfitter	6	-	6	3
	Glassworker	17	-	17	4
	Heavy Duty Mechanic	20	-	20	4
	Instrument Mechanic	13	-	13	4
	Ironworker	17	-	17	4
	Lather	15	-	15	3
	Machinist	24	-	24	4
	Millwright	20	-	20	4
	Motor Mechanic	20	-	20	4
	Painter & Decorator	12	-	12	4
	Partsman	10	-	10	3
	Plasterer	12	-	12	3
	Plumber	27	-	27	4
	Power Electrician	17	-	17	4
	Radio Technician	14	-	14	4
	Refrigeration Mechanic	25	-	25	4
	Roofer	13	-	13	3
	Sheet Metal Mechanic	24	-	24	4
	Steamfitter	27	-	27	4
	Tile Setter	11	-	11	4
	Welder	16	-	16	3

* In-school training only.

** Government examination and licensing only.

T A B L E XXII

SUBJECTS OF STUDY AVAILABLE AT
THE NORTHERN ALBERTA INSTITUTE OF TECHNOLOGY
BY PROGRAM OFFERINGS - 1970

Program	Subject	Number of Courses Required			Total Program Hours
		Prescribed	Optional	Total	
Diploma					
	Air Conditioning and Refrigeration Technology	44	-	44	2028
	Architectural Technology	48	-	48	2184
	Architectural Technology	63	-	63	3012
	Banking and Financial Management	38	-	38	1870
	Biological Sciences	40	-	40	2082
	Building Construction	43	-	43	1968
	Business Administration	41	-	41	1941
	Chemical Technology	38	-	38	2124
	Chemical Research Technology	44	-	44	2364
	Civil Technology	38	-	38	1956
	Commercial Baking	17	-	17	2448
	Commercial Cooking	10	-	10	2450
	Computer Systems	33	-	33	2134
	Dental Laboratory Technology	32	-	32	2028
	Dietary Technology	19	-	19	1086
	Distributive Technology (Marketing)	39	-	39	1958
	Drafting Technology	39	-	39	2206
	Drafting Technology	55	-	55	2970
	Electrical Technology	43	-	43	2432
	Electrical Technology	54	-	54	3252
	Electronic Technology	46	-	46	2446
	Electronic Technology	54	-	54	3036
	Exploration (Mineral-Petroleum) Technology	33	-	33	1992
	Food Processing Technology	39	-	39	2040
	Forest Technology	58	-	58	2554
	Gas Technology	40	-	40	2100
	General Civil Structures	37	-	37	1956
	Heavy Duty Equipment Technology	35	-	35	2148
	Industrial Production	42	-	42	2088
	Industrial Production	57	-	57	3108
	Instrumentation	41	-	41	2412
	Instrumentation	54	-	54	3050

T A B L E XXII (continued)

Program	Subject	Number of Courses Required			Total Program Hours
		Prescribed	Optional	Total	
Diploma					
	Materials Technology	45	-	45	2018
	Medical Laboratory Technology	12	-	12	1165
	Medical Records Librarian	40	1	41	1862
	Medical X-Ray Technology	10	-	10	506
	Photography	24	-	24	2160
	Plastics Technology	37	-	37	2037
	Radio - T.V. Arts	35	-	35	1712
	Respiratory Technology	17	-	17	984
	Secretarial Science	36	-	36	1759
	Social Services	38	-	38	2344
	Surveying	35	-	35	1992
	Telecommunications	39	-	39	2392
	Telecommunications	51	-	51	3168
Certificate					
	Banking	20	-	20	1001
	Commercial Baking	-	-	-	900
	Commercial Signwriting	4	-	4	900
	Dental Assisting	23	-	23	958
	Dietary Technology	19	-	19	1211
	Meat Cutting-Butchering	6	-	6	710
	Millwork & Carpentry	6	-	6	900
	Office Machines Technology	12	-	12	1020
	Radio and Television Servicing	12	-	12	940

T A B L E XXIII

SUBJECTS OF STUDY AVAILABLE AT
THE SOUTHERN ALBERTA INSTITUTE OF TECHNOLOGY
BY PROGRAM OFFERINGS - 1970

Program	Subject	Number of Courses Required			Total Program Hours
		Prescribed	Optional	Total	
Diploma					
	Advertising Art	28	-	28	3600
	Aeronautical Engineering Technology	33	-	33	2592
	Air Conditioning and Refrigeration Technology	28	-	28	1860
	Aircraft Maintenance Technology	27	-	27	1915
	Applied Arts and General Crafts	27	-	27	3600
	Architectural Technology	24	-	24	1820
	Architectural Technology	30	-	30	2880
	Automotive Service Technology	19	-	19	1822
	Business Administration	28	3	31	1828
	Chemical Technology	21	-	21	1800
	Commercial Cooking	8	-	8	2100
	Computer Technology	33	-	33	2448
	Dietary Service Technology	28	-	28	1200
	Drafting Technology	22	-	22	1820
	Drafting Technology	31	-	31	2880
	Electrical Technology	20	-	20	1830
	Electrical Technology	24	-	24	2900
	Electronic Technology	44	-	44	2870
	Fine Art Painting	25	3	28	3600
	Fine Art Sculpture	25	2	27	3600
	Graphic Arts Administration	21	-	21	1825
	Hotel, Motel & Restaurant Administration	30	-	30	1836
	Industrial Engineering Technology	37	2	39	2140
	Journalism Administration	18	-	18	1800
	Library Arts	18	-	18	1800
	Mechanical Engineering Technology	25	-	25	1800
	Medical Laboratory Technology	28	-	28	1200
	Merchandising Administration	30	1	31	1788

T A B L E XXIII (continued)

Program	Subject	Number of Courses Required			Total Program Hours
		Prescribed	Optional	Total	
Diploma					
	Petroleum (Geology-Reservoir) Technology	27	-	27	1890
	Pottery and Ceramics	26	1	27	3600
	Power Engineering Technology	29	-	29	1950
	Respiratory Technology	17	-	17	906
	Secretarial Science	30	-	30	2004
	Structural Technology	24	-	24	1800
	Surveying	25	-	25	1820
	Television, Stage and Radio Arts	17	-	17	1800
Certificate					
	Commercial Baking	13	-	13	1400
	Diesel Mechanics	15	-	15	1380
	Dining Room Service	5	-	5	360
	Medical Records	16	-	16	900
	Recreation Facility Maintenance	15	-	15	876
	Short Order & Specialty Cooking	4	-	4	1050
	Welding (Arc and Gas)	2	-	2	90

T A B L E XXIV

SUBJECTS OF STUDY AVAILABLE AT
GRANDE PRAIRIE REGIONAL COLLEGE
BY PROGRAM OFFERINGS - 1970

Program	Subject	Number of Courses Required			Total Program Hours
		Prescribed	Optional	Total	
Diploma					
	Business Administration	20	-	20	1216
	Secretarial Science	17	5	22	1552
Certificate					
	Business Administration	10	-	10	624
	Secretarial Science	12	-	12	752

TABLE XXV

SUBJECTS OF STUDY AVAILABLE AT
LETHBRIDGE COMMUNITY COLLEGE
BY PROGRAM OFFERINGS - 1970

Program	Subject	Number of Courses Required			Total Program Hours
		Prescribed	Optional	Total	
Diploma					
	Automated Data Processing	20	-	20	1488
	Finance	21	-	21	1472
	Irrigation	33	-	33	1792
	Journalism	15	-	15	1056
	Law Enforcement	23	4	27	1522
	Marketing	23	-	23	1472
	Nursing	14	1	15	1748
	Office Administration	20	-	20	1456
	Outdoor Recreation	13	14	27	1750
	Radio - T.V. Broadcasting	14	2	16	1232
	Theatre Arts	29	1	30	1344
	Vocational Agriculture	25	-	25	1428
Certificate					
	Architectural Drafting	10	-	10	704
	Automotives	12	-	12	736
	Commercial Cooking	11	-	11	1024
	Drafting & Architectural Technology	14	-	14	928
	Electronic Technology	13	-	13	896
	Journalism	15	-	15	640
	Meat Technology	11	-	11	1056
	Radio - T.V. Broadcasting	15	1	16	656
	Secretarial Science	11	-	11	784
	Surveying	14	-	14	688
	Theatre Arts	13	-	13	576
	Welding	3	-	3	192

T A B L E XXVI

SUBJECTS OF STUDY AVAILABLE AT
MEDICINE HAT COLLEGE
BY PROGRAM OFFERINGS - 1970

Program	Subject	Number of Courses Required			Total Program Hours
		Prescribed	Optional	Total	
Diploma					
	Business Administration	17	3	20	900
	Secretarial Science	18	2	20	1560
Certificate					
	Business Administration	10	-	10	450
	Secretarial Science	10	-	10	780

T A B L E XXVII

SUBJECTS OF STUDY AVAILABLE AT
MOUNT ROYAL COLLEGE
BY PROGRAM OFFERINGS - 1970

Program	Subject	Number of Courses Required			Total Program Hours
		Prescribed	Optional	Total	
Diploma					
	Agri-Business	16	3	19	912
	Applied Social Science	13	7	20	960
	Aviation	15	4	19	912
	Broadcasting	14	4	18	864
	Business Administration	12	8	20	960
	Computer Science	13	7	20	960
	Correctional Careers	20	2	22	1056
	Day Care	24	-	24	1152
	Engineering	13	7	20	960
	General Arts & Science	13	7	20	960
	Insurance	13	7	20	960
	Interior Design	19	4	23	1092
	Journalism	14	4	18	912
	Music	32	2	34	1632
	Nursing	18	2	20	2320
	Petroleum Land Management	13	7	20	960
	Physical Education	13	7	20	960
	Police Science	13	7	20	960
	Public Administration	19	2	21	1008
	Public Relations	13	7	20	960
	Real Estate	16	4	20	960
	Recreation and Outdoor Education	17	5	22	1056
	Religion	13	7	20	960
	Secretarial Science	17	4	21	1008
	Social Work Careers	19	3	22	1056
	Urban & Regional Planning	17	3	20	960
Certificate					
	Agri-Business	10	-	10	480
	Architecture	11	-	11	528
	Business Administration	7	3	10	480
	Clerk-Typist	10	-	10	480
	Day Care	12	-	12	576
	Real Estate	10	-	10	480
	Residential Child Care	11	-	11	528
	Stenography	11	-	11	528

T A B L E XXVIII

SUBJECTS OF STUDY AVAILABLE AT
RED DEER COLLEGE
BY PROGRAM OFFERINGS - 1970

Program	Subject	Number of Courses Required			Total Program Hours
		Prescribed	Optional	Total	
Diploma					
	Arts and Science	20	-	20	1680
	Business Administration	22	1	23	2100
	Nursing	19	3	22	2412
	Secretarial Science	23	2	25	2910
	Social Service	21	2	23	3528
Certificate					
	Business Administration	12	-	12	1120
	Secretarial Science	14	-	14	1680

T A B L E XXIX

SUBJECTS OF STUDY AVAILABLE AT
THE AGRICULTURAL AND VOCATIONAL COLLEGE, FAIRVIEW
BY PROGRAM OFFERINGS - 1970

Program	Subject	Number of Courses Required			Total Program Hours
		Prescribed	Optional	Total	
Diploma					
	Agricultural Mechanics	26	7	33	1800
	Agricultural Production	26	8	34	1800
	Crop Production	27	7	34	1800
	Livestock Production	27	7	34	1800
Certificate					
	Clerk Typist	15	-	15	1500
	Secretarial Science	19	-	19	1500
	Stenography	16	-	16	1500

T A B L E XXX

SUBJECTS OF STUDY AVAILABLE AT
THE AGRICULTURAL AND VOCATIONAL COLLEGE, OLDS
BY PROGRAM OFFERINGS - 1970

Program	Subject	Number of Courses Required			Total Program Hours
		Prescribed	Optional	Total	
Diploma					
	Agri-Business	-	-	-	*
	Agricultural Equipment Technology	17	-	17	1680
	Farm & Ranch Production Technology	16	12	28	1600
	Fashion & Design Merchandising Technology	19	2	21	1140
	Field Crop Production Technology	21	7	28	1600
	Horticultural Technology	28	2	30	1800
	Land Classification Technology	22	6	28	1600
	Livestock Feeds Technology	18	10	28	1600
	Livestock Production Technology	18	10	28	1600
	Soil and Fertilizer Technology	22	6	28	1600
	Soil and Water Technology	22	6	28	1600
Certificate					
	Farm Land Appraisal and Assessment	1	-	1	120
	Horse Hoof Care	1	-	1	40
	Pesticide Application	1	4	5	40
	Secretarial Science	11	1	12	1100
	Surveying	1	-	1	120

* By arrangement with staff.

T A B L E XXXI

SUBJECTS OF STUDY AVAILABLE AT
THE AGRICULTURAL AND VOCATIONAL COLLEGE, VERMILION
BY PROGRAM OFFERINGS - 1970

Program	Subject	Number of Courses Required			Total Program Hours
		Prescribed	Optional	Total	
Diploma					
	Agri-Automation	17	8	25	1800
	Agri-Chemicals	17	4	21	1800
	Agricultural Mechanics	18	8	26	1800
	Animal Reproduction	18	6	24	1800
	Building Materials Merchandising	19	7	26	1800
	Field Crop Production	13	9	22	1800
	Food Technology	27	2	29	1800
	General Studies (Multi-Disciplinary)	18	6	24	1800
	Home Economics Demonstrator	24	3	27	1800
	Land Classification and Assessment	13	9	22	1800
	Land Resources	13	9	22	1800
	Livestock Feeds	20	4	24	1800
	Livestock Production	19	7	26	1800
	Soils and Fertilizers	13	10	23	1800
	Textiles and Design	26	2	28	1800
Certificate					
	Artificial Insemination	1	-	1	160
	Custodial - Hospital Housekeeping	1	-	1	64
	Dairy Production	1	-	1	160
	Hog Production	1	-	1	240
	Horse Hoof Care	1	-	1	35
	Secretarial Science	16	-	16	1800

T A B L E XXXII

SUBJECTS OF STUDY AVAILABLE AT
THE DIVISION OF VOCATIONAL EDUCATION AND
ALBERTA VOCATIONAL CENTRES CALGARY, EDMONTON AND FORT McMURRAY
BY PROGRAM OFFERINGS - 1970

Program	Subject	Number of Courses Required			Total Program Hours
		Prescribed	Optional	Total	
DIVISION OF VOCATIONAL EDUCATION					
Certificate					
	Basic Financial Controls	1	-	1	20
	Bookkeeping for Small Businesses	1	-	1	28
	Business Development	1	-	1	20
	Business Law	1	-	1	20
	Credits & Collections	1	-	1	20
	Effective Supervision - Administration	1	-	1	20
	Effective Supervision - Communications	1	-	1	20
	Effective Supervision in Construction	1	-	1	20
	Effective Supervision - Human Relations	1	-	1	20
	Effective Supervision in Production	1	-	1	20
	Farm Management Accounting	1	-	1	20
	Finance and Taxation	1	-	1	20
	Firefighting	1	-	1	120
	Hunting Guides	1	-	1	90
	Industrial Trainers Course	1	-	1	60
	Job Instruction Training	1	-	1	21
	Job Instruction Training & Human Relations	1	-	1	18
	Management Accounting	1	-	1	16
	Marketing for the Hospitality Industry	1	-	1	20
	Nursing Orderlies	12	-	12	1400
	Personnel	1	-	1	20
	Pre-Employment Carpentry	1	-	1	480
	Retail Management	1	-	1	20
	Retail Selling	1	-	1	20
	Welding (Gas)	1	-	1	120

T A B L E XXXII (continued)

Program	Subject	Number of Courses Required: Prescribed	Optional	Total	Total Program Hours
ALBERTA VOCATIONAL CENTRE CALGARY					
Certificate					
	Bookkeeping	7	-	7	900
	Clerk Typist	9	-	9	960
	Stenography	11	-	11	1020
ALBERTA VOCATIONAL CENTRE EDMONTON					
Certificate					
	Clerk Typist	7	-	7	980
	Nursing Orderlies	11	-	11	1045
	Roughneck (Pre-employment)	1	-	1	140
	Stenography	8	-	8	1200
ALBERTA VOCATIONAL CENTRE FORT McMURRAY					
Certificate					
	Automotive Mechanics	8	-	8	750
	Building Construction	6	-	6	750
	Career Driving	5	-	5	450
	Carpenter Journeyman's Upgrading	5	-	5	350
	Clerk Typist	10	-	10	1500
	Commercial Cooking	6	-	6	750
	Heavy Equipment Operating	4	-	4	450
	Pipe Trades	4	-	4	750
	Welding	4	-	4	750
	Welding, Elementary Arc	4	-	4	120

T A B L E XXXIII

SUBJECTS OF STUDY AVAILABLE IN OTHER INSTITUTIONS
BY PROGRAM OFFERINGS - 1970

Program	Subject	Number of Courses Required			Total Program Hours
		Prescribed	Optional	Total	
THE BANFF SCHOOL OF FINE ARTS					
Sr. Diploma	Theatre Crafts	-	2	2	400*
Jr. Diploma	Theatre Crafts	12	-	12	1600
Sr. Certificate	Ceramics	30	-	30	180
Jr. Certificate	Ceramics	30	-	30	180
Sr. Certificate	Drama	-	2	2	90
Inter. Certificate	Drama	2	1	3	204
Jr. Certificate	Drama	2	1	3	204
Sr. Certificate	Painting	2	-	2	300
Jr. Certificate	Painting	-	2	2	300
DEPT. OF HEALTH, ALBERTA HOSPITALS-OLIVER, PONOKA					
Diploma	Psychiatric	15	-	15	3 yrs
Diploma	Psychiatric RN	32	-	32	4 yrs
DEPT. OF HEALTH, LAB & X-RAY SCHOOL					
Certificate	Medical Lab & X-Ray Combined (Basic Clinical)	12	-	12	1068

T A B L E XXXIII (continued)

Program Subject	Number of Courses Required: Prescribed	Optional	Total	Total Program Hours
DEPT. OF HEALTH, NURSING AIDE SCHOOL CALGARY				
Certificate				
Nursing Aide (Certified)	12	-	12	1370**
DEPT. OF HEALTH, NURSING AIDE SCHOOL EDMONTON				
Certificate				
Nursing Aide (Certified)	12	-	12	1370**
THE FOREST TECHNOLOGY SCHOOL, HINTON				
Certificate				
Forestry (Advanced)	19	-	19	1355
Forest Firefighter	1	-	1	40
Lookout Man	1	-	1	40
THE PETROLEUM INDUSTRY TRAINING SERVICE				
Certificate				
Derrickman Technician	5	2	7	240
Driller Technician	7	3	10	300
Floorman Technician	1	-	1	30
Motorman Technician	3	1	4	150
Petroleum Industry Short Courses	-	-	-	30-200
Petroleum Practices	4	-	4	120
Pipeline Electrical Maintenance	3	-	3	90

* Additional to a Junior Diploma.

** Includes on-the-job training.

APPENDIX B

Questionnaire

and

University Questionnaire

THE 1970 SURVEY

OF

ALBERTA MANPOWER DEVELOPMENT

P H A S E I

Q U E S T I O N N A I R E

Does your institution issue Degrees (Section 1)? 1. [ ] Yes 2. [ ] No

Does your institution issue Diplomas (Section 2)? 1. [ ] Yes 2. [ ] No

Does your institution issue Certificates of Completion of Apprenticeship (Section 3)?

1. [ ] Yes 2. [ ] No

Does your institution issue Certificates (Section 4)?

1. [ ] Yes 2. [ ] No

Please complete each appropriate Section that follows.

If available, computer print-outs may be submitted.

1. Identify the name and type of educational institution by checking the appropriate square. [✓]

01. [ ] The University of Alberta

02. [ ] The University of Calgary

03. [ ] The University of Lethbridge

04. [ ] Grande Prairie College

05. [ ] Red Deer College

06. [ ] Mount Royal College

07. [ ] Lethbridge College

08. [ ] Medicine Hat College

09. [ ] Northern Alberta Institute of Technology

10. [ ] Southern Alberta Institute of Technology

11. [ ] Adult Vocational Centre (Fort McMurray)

12. [ ] Adult Vocational Centre (Edmonton)

13. [ ] Adult Vocational Centre (Calgary)

14. [ ] Fairview Agricultural & Vocational College

15. [ ] Vermilion Agricultural & Vocational College

16. [ ] Olds Agricultural & Vocational College

17. ☐ Red Deer Hospital Nursing School

18. ☐ Lethbridge Hospital Nursing School

19. ☐ Medicine Hat Hospital Nursing School

20. ☐ Calgary Foothills Hospital Nursing School

21. ☐ Calgary General Hospital Nursing School

22. ☐ Calgary Holy Cross Hospital Nursing School

23. ☐ Calgary School for Nursing Aides

24. ☐ Edmonton College St. Jean Nursing School

25. ☐ Edmonton Misceracordia Hospital Nursing School

26. ☐ Edmonton Royal Alexandra Hospital Nursing School

27. ☐ Edmonton School for Nursing Aides

28. ☐ Other (specify) _____

2. Indicate the hours presently accepted as your weekly class schedule. _____hrs/wk
   (ie: the hours per week for scheduling classes)

SECTION I - DEGREE LEVEL ONLY

For each *Program*, record the *Subjects* of concentration offered. Show the total number of *Courses* required in 1970 in each subject and the total hours required for graduation.* (See definition of terms for meaning of 'program', 'subject' and 'course').

In this Section:

Prescribed - means the number of courses required by the institution irrespective of choices available.

Optional - means the number of courses the student is free to choose.

Total - means the total minimum number of courses required for graduation and equals the prescribed plus the optional courses.

DEGREE LEVEL ONLY

(Computer print-outs of the following may be submitted).

Program	Subject	Number of Courses Required			Total Program Hours
		Prescribed	Optional	Total	
*for example:					
B.A.	Economics	13	7	20	3480
B.Sc.	Chemistry	13	7	20	3480

SECTION 2 - DIPLOMA LEVEL ONLY

For each *Program*, record the *Subjects* of concentration offered. Show the total number of *Courses* required in 1970 in each subject, and the total number of hours required for graduation.*

DIPLOMA LEVEL ONLY

(Computer print-outs of the following may be submitted).

Program	Subject	Number of Courses Required			Total Program Hours
		Prescribed	Optional	Total	

* for example:

Diploma of Applied Arts	Bus. Administration	14	1	15	1560

SECTION 3 - COMPLETION OF APPRENTICESHIP ONLY

For each *Program*, show the *Subjects* available. Record the *Courses* required in 1970 and the total hours study required in school for each subject.*

CERTIFICATE OF COMPLETION OF APPRENTICESHIP ONLY

(Computer print-outs of the following may be submitted).

Program	Subject	Number of Courses Required			Total School Hours
		Topical	Related	Total	
* for example:					
Cert. of Proficiency	Plumber	14	2	16	960
Cert. of Qualification	Carpenter	14	2	16	960

SECTION 4 - CERTIFICATE LEVEL ONLY

For each *Program* show the *Subjects* available. Record the number of *Courses* required in 1970 and the total hours study required for graduation.*

CERTIFICATE LEVEL ONLY

(Computer print-outs of the following may be submitted).

Program	Subject	Number of Courses Required			Total Program Hours
		Prescribed	Optional	Total	

* for example:

Certificate	Stenography	11		11	1350

SECTION 5

Record for each *Program*, separated into the *Subjects* of concentration:

1. the number of graduates in the calendar year 1970.
2. the original enrolment of that group which subsequently graduated in 1970. *(If the 1970 graduates were in a two year program, the original enrolment would have taken place in 1968. Section 5A is to be used only for those institutions (programs) which operate on a continuous and/or individual enrolment and graduation basis).*
3. the new enrolment in the calendar year 1970.
4. Where ORIGINAL ENROLMENT OF GROUP THAT GRADUATED IN 1970 and NEW ENROLMENTS PER PROGRAM IN THE CALENDAR YEAR 1970 are not identifiable with final *subject of concentration* selected, provide the total enrolments instead.

(Computer print-outs of the following may be submitted).

Program	Subject	1. Number of Graduates in the Calendar Year 1970	2. Original Enrolment of Group that Graduated in 1970	3. New Enrolment Per Program in the Calendar year 1970

SECTION 6

For each *Program*, separated into the *Subjects* of concentration, record the name, Social Insurance Number and home address of each person who graduated in the Calendar Year 1970.* (Computer print-outs of the following may be submitted).

Program	Subject	1970 Graduate's Name	Social Insurance Number	Home Address	City	Place of Employment
*for example: Certificate	Small Engine Repair	George White	210953237	620 - 7 Ave. S.W.	Calgary	Unknown
B.Sc. Agric.	Soil Science	Ralph Smith	619131037	R.R. 2	Red Deer	Lands & Forests, Ottawa

SECTION 7

The following form is a basic data collecting form. The information requested should be provided *for each room* used for instructional purposes *in each building* for the term or terms ending in 1970.

NAME OF INSTITUTION: _____

BUILDING NAME OR IDENTIFICATION: _____

(Computer print-outs of the following may be submitted).

Bldg. Name & Rm #	Assignable Sq. Ft. of Floor Area	Number of Student Stations	Average Number of Student-Station Occupancies Per Week	Principal Use of Room*	Average Number of Hours Per Week the Room is Scheduled** (for regularly scheduled classes)

* Show classroom as C
Show laboratory as L
Show shop as S

If a room has a multi use show the combination

** Irrespective of the number of students in the room.

THE 1970 SURVEY

OF

ALBERTA MANPOWER DEVELOPMENT

P H A S E I

Q U E S T I O N N A I R E

Please complete each appropriate Section that follows.

1. Identify the name and type of educational institution by checking the appropriate square. [✓]

   1. [ ] The University of Alberta

   2. [ ] The University of Calgary

   3. [ ] The University of Lethbridge

SECTION I

For each *Program*, record the *Subjects* of concentration offered. Show the total number of *Courses* required in the calendar year 1970 (see definition of terms, Page 1) in each subject and the total *Years* required for graduation.*

The information requested in Section I has to do primarily with establishing a list of the various areas or subjects of study and vocational preparation available in all the major educational institutions throughout the Province in the Calendar Year 1970. From the information provided, the subject may be identified in terms of the kind of qualification obtainable, i.e. a degree or diploma, etc. It may also be identified in terms of the composition of the courses and the total time required in years to complete the requirements for graduation. This information is relative to the full study in that it constitutes the basis for comparison among the many subjects and forms of qualification offered by all educational institutions throughout the Province, and not just Universities.

In this Section:

Prescribed - means the number of courses required by the institution irrespective of choices available.

Optional - means the number of courses the student is free to choose.

Total - means the total minimum number of courses required for graduation and equals the prescribed plus the optional courses.

List Degree Level Programs and Diploma Level Programs separately.

Program (See footnote #1)	Subject (See footnote #2)	Number of Courses Required (See footnote #3)			Total Program Years (See footnote #4)
		Prescribed	Optional	Total	

SECTION I

Program (See footnote #1)	Subject (See footnote #2)	Number of Courses Required (See footnote #3)			Total Program Years (See footnote #4)
		Prescribed	Optional	Total	
*for example:					
B.A.	Economics	13	7	20	4
B.Sc.	Chemistry	13	7	20	4
Diploma	Dental Hygiene	6	7	13	2

Footnote #1

Program - a comprehensive schedule of subjects covering the requirements for formal recognition including a degree, diploma or certificate.

In this text, the term Program is used to identify the measure of formal qualification a graduate may receive upon successful completion of the requirements for graduation. For example, at the university level, the measure of formal qualification the graduate may receive is a Bachelor of Arts degree or a Master of Education, or, depending on the program, a Diploma in Dental Hygiene.

Footnote #2

Subject - a department of knowledge or skill; a field of study, a major, or an area of concentration of study.

The term Subject is used to designate a distinct area or department of knowledge or skill. It is the designation used to identify the concentration of study undertaken. It is the field in which the graduate has been prepared by study to function in as a knowledgeable participant. Whereas the program may be a Bachelor of Education degree, the subject of study may be Elementary or Industrial Arts. Whereas the program may be a Bachelor of Arts degree, the subject of study may be - Economics, or Philosophy or Political Science, etc.

Footnote #3

Course - a series of lectures or other learning experiences dealing with a segment of a subject.

A Course is identified as that portion of a subject that is presented in a limited segment. A subject would therefore be made up of a number of courses, some of which might be sequential. Three such sequential courses may be identified numerically, as for instance math. 212 and math. 312 and math. 412.

Footnote #4

Total Program Years

The column "Total Program Years" will indicate the minimum number of years of study required to complete the program. A year in this instance will be accepted as a full and regular academic year. The time will be based on the allocation by the institution and not on the choice of the student who may for various reasons exceed the allotted time in obtaining qualification. In the case of Doctoral degrees only the Program and Subject need be listed. The number and extent of courses is so individualized that such information is meaningless to the study. The total program years however, should be shown as those required by the institution irrespective of the time utilized by the student.

SECTION 2

Record for each *Program*, separated into the *Subjects* of concentration:

1. the number of graduates in the calendar year 1970.
2. the original enrolment of that group which subsequently graduated in 1970. *(If the 1970 graduates were in a two year program, the original enrolment would have taken place in 1968. If the 1970 graduates were in a four year program, the original enrolment would have taken place in 1966.)*
3. the new enrolment in the calendar year 1970.
4. Where ORIGINAL ENROLMENT OF GROUP THAT GRADUATED IN 1970 and NEW ENROLMENTS PER PROGRAM IN THE CALENDAR YEAR 1970 are not identifiable with final *subject of concentration* selected, provide the total enrolments by program instead.

(Computer print-outs of the following may be submitted.)

Program (See Footnote #5)	Subject (See footnote #6)	1. Number of Graduates in the Calendar Year 1970 (See footnote #7)	2. Original Enrolment of Group that Graduated in 1970 (See footnote #8)	3. New Enrolment Per Program in the Calendar Year 1970 (See footnote #9)

SECTION 2

Program (See footnote #5)	Subject (See footnote #6)	1. Number of Graduates in the Calendar Year 1970 (See footnote #7)	2. Original Enrolment of Group that Graduated in 1970 (See footnote #8)	3. New Enrolment Per Program in the Calendar Year 1970 (See footnote #9)

Footnote #5

Programs in this section should be listed in the same order as they were listed in Section I, Page 9. See footnote #1.

Footnote #6

Subjects in this Section should be listed in the same order as they were listed in Section I, Page 9. See footnote #2.

Footnote #7

Show only the number who graduated in the calendar year 1970, including post-graduates.

Footnote #8

Where it is not possible to identify the original enrolment by subject, the original enrolment by program may be shown as a total figure. The original enrolment of post-graduate completions is ambiguous and should be omitted.

Footnote #9

Where it is not possible to identify the new enrolment in the calendar year 1970 by subject, such new enrolment by program may be shown as a total figure. New enrolment will include only those enrolling in the first year of a program and will not include transfers into subsequent years. The new enrolment of post-graduate students does not have a meaningful relationship in this section and should be omitted.

SECTION 3

For each *Program*, separated into the *Subjects* of concentration, record the name and home address of each person who graduated in the Calendar Year 1970.*

Program (See footnote #10)	Subject (See footnote #11)	1970 Graduate's Name (See footnote #12)	Home Address	City

*for example:

B.Sc. Agric.	Soil Science	Ralph Smith	620 - 7th Avenue S.W.	Calgary

Footnote #10

Programs in this section should be listed in the same order as they were listed in Section I, Page 9 and Section 2, Page 13. See footnote #1.

Footnote #11

Subjects in this section should be listed in the same order as they were listed in Section I, Page 9 and Section 2, Page 13. See footnote #2.

Footnote #12

The number of names and addresses of graduates should equal the number shown as graduates in the calendar year 1970 in Section 2, Column 1.

niversity of _____

	Room-Period Utilization				Student-Station Utilization				Instructional Area (in square feet)				Student-Stations			
	* C	* L	* S	* Comb.	C	L	S	Comb.	C	L	S	Comb.	C	L	S	Comb
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Total For Campus																

* C - Classroom
L - Laboratory
S - Shop
Comb. - Multi use rooms